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ABSTRACT

A survey was conducted regarding the occupational training provided by employers for fourteen occupations in four metalworking industries. The fourteen occupations selected for study included crane operator, electrician, layout worker, machine tool setter, machinist, mechanic, sheet metal worker, and tool and die maker. The four industries surveyed were fabricated metal products, machinery (except electrical), electrical machinery, and transportation equipment. The findings include the following: (1) Only 15% of all establishments in the four metalworking industries surveyed provided structured occupational training in the fourteen occupations studied, (2) the proportion of establishments offering structured training generally increased as employment size increased, (3) nearly one-half of the 133,700 workers enrolled in structured training in the fourteen occupations received training in the machinist and welder occupations, (4) about 71% of all structured training was conducted to qualify employees for work in an occupation whereas 29% was conducted to improve skills of workers in current jobs, (5) more than two-thirds of all structured occupational training was provided on the job, and (6) about five-sixths of the establishments with training did not have a specific budget allocation for training. (Thirty tables of data are included in the text. Eleven reference tables, the scope and method of survey, and the survey form are appended.) (EM)

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Occupational Training in Selected Metalworking Industries, 1974

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A Report on a Survey of Selected Occupations

U.S. Department of Labor
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Employment and Training Administration
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1977

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Preface

This report presents the results of a survey of occupational training provided by employers for 14 occupations in four metalworking industries. The survey was conducted by the Bureau of Labor Statistics with funds provided by the Employment and Training Administration, Office of Research and Development. The report was prepared by H. James Neary, Division of Occupational Outlook, under the supervision of Max Carey. Lafayette Grisby was the project monitor for the Office of Research and Development.

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Introduction

Responding to the report of a presidential task force[1] which in 1967 called attention to the serious information gap on occupational training in private industry, the Employment and Training Administration, Department of Labor, provided funds to the Bureau of Labor Statistics to conduct a pilot survey of employer training in private industry. The objective of that survey was to study the feasibility of collecting data on enrollments and completions of occupational training provided by private employers, and to determine the best method of collecting such data. The Bureau concluded in the pilot survey that "data on training activities in private industry can be collected effectively."[2] In addition, a mail survey was recommended as the basic collection method.

This report presents the results of a survey that stemmed from the pilot survey. The new survey was designed both to obtain useful data and to resolve problems associated with conducting a national survey of occupational training provided by employers in private industry.

Manual occupations requiring substantial training were selected for study because employers generally provide training in such occupations. The following 14 occupations, which account for a significant proportion of employment among the highly skilled manual occupations, were selected:

- Crane, derrick, and hoist operator
- Electrician
- Electroplater
- Filer, grinder, buffer, chipper, cleaner, or polisher
- Layout worker, metal
- Machine tool setter
- Machinist
- Mechanic, maintenance
- Millwright
- Patternmaker, metal/wood
- Plumber and/or pipefitter
- Sheet-metal worker
- Tool and die maker, metal
- Welder and flamecutter

Four metalworking industries—fabricated metal products; machinery, except electrical; electrical machinery; and transportation equipment—were selected for study because they employed a significant proportion of all workers in these occupations.

[1] *A Government Commitment to Occupational Training in Industry: Report of the Task Force on Occupational Training in Industry* (Washington, D.C., August 1968).

[2] H. James Neary, "The BLS Pilot Survey of Training in Industry," *Monthly Labor Review*, February 1974, p. 31.

Definitions

The pilot survey indicated that "training" would have to be defined very precisely for good survey results. "On-the-job training", for example, covers a wide range, from learning a job skill in a highly structured apprenticeship program to simply "learning by doing" or "picking it up". With the assistance of a group of consultants experienced in occupational training in industry,[3] training was defined as a *structured program* provided by employers for their employees that is designed to permit employees to *acquire or improve skills* in the 14 selected occupations. Training could be given on the job, in a classroom or especially equipped training site, or, as in an apprenticeship program, through a combination of on-the-job experience and related classroom training.

Training was differentiated from work experience as a source of learning by specifying that training required an instructor, whereas experience rested solely upon the activity of the learner. Teaching machines and programmed learning devices could substitute for a human instructor. However, a supervisor or a fellow employee providing instruction incidental to his or her main responsibilities was not defined as an instructor. In those instances, time spent on the job during a learning period was defined as work experience and not training. Training must also have had an identifiable plan designed to develop a worker's skill or level of competence. Excluded from the definition of training were courses and programs not primarily concerned with teaching occupational skills, such as safety orientation, company policies and practices, and supervisory or management practices.

Training was classified as either qualifying training or skill improvement training. *Qualifying training* was defined as "training given to qualify newly hired or other employees for work in an occupation." *Skill improvement training* was defined as "training given to improve the skills of a worker in the occupation in which he or she is currently employed."

Specific definitions also were provided for on-the-job training (OJT) and off-production-site training (OPST). *On-the-job training* was defined as a training process that

[3] Felician F. Foltman, New York State School of Industrial and Labor Relations, Cornell University; Gary B. Hansen, Department of Economics, Utah State University; and Karl R. Kunze, Kunze Associates, Ventura, California.

takes place *primarily* on the job during actual production operations. OJT may include instruction given off the production site. Apprenticeship training was to be reported in the qualifying-OJT category. *Off-production-site training* was defined as a training process that usually takes place in a training facility such as a classroom or especially equipped site used primarily for training and operated by the company, either on or off the firm's premises, or by other organizations such as a technical institute, community college, or university. Training at a facility not operated by the firm was included in the survey only if the company paid part of the training cost or the employee's wages during class time.

Data collection

Data were collected during 1975 and early 1976 on training provided by employers during 1974. Collection was primarily by mail, supplemented by some personal visits. (See appendix B for additional information.)

Reliability

Statistical results of the survey should be used as indicators of general magnitude rather than as precise measures because standard errors were quite high.[4] In many cases the standard error was more than one-half the estimate. In general, the standard error of estimates for large establishments was lower than the standard error of estimates for small establishments.

High standard errors were expected, however, because of the small size of the measured variable and the small proportion of establishments providing training. The data nevertheless are useful because little or no information on employer training was available before the survey.

[4] The standard error measures the variation that may occur by chance because a sample is surveyed rather than the universe. (For further discussion and standard error table, see appendix B.)

Highlights

*Only 15 percent of all establishments in the four metalworking industries selected provided structured occupational training in the 14 occupations studied in 1974.

*The proportion of establishments offering structured training generally increased as employment size increased.

*Establishments with 1,000 employees or more accounted for 44 percent of all enrollments in structured training.

*Nearly one-half of the 133,700 workers enrolled in structured training in the 14 occupations received training in the machinist and welder occupations.

*Only about 5 percent of all establishments with no structured training in the selected occupations provided training in other occupations.

*The 77,700 employees completing structured training in the selected occupations in 1974 represented about 6 percent of total January 1975 employment in those occupations in the industries studied. Ratios ranged from 11 percent for welders to 2 percent for patternmakers.

*About 71 percent of all structured training was conducted to qualify employees for work in an occupation whereas 29 percent was conducted to improve skills of workers in current jobs.

*More than two-thirds of all structured occupational training was provided on the job.

*Welders was the only occupation with more training off the production site than on the job.

*Enrollments in registered apprenticeship programs accounted for about 46 percent of qualifying on-the-job training in the 14 occupations.

*On-the-job programs were of much longer duration than programs held off the production site.

*Establishments provided training primarily because they felt job skills could best be taught in their own training programs and because the education and/or training background of their employees was inadequate.

*Employee interest in an occupation was the primary factor used to select employees for training.

*Employees in about three-fifths of the establishments providing structured training in the 14 occupations were promoted upon satisfactory completion of the training.

*About one-fifth of the establishments with structured training did not maintain records of their employees' training experience; most were small establishments.

*About three-fourths of the establishments providing structured training periodically evaluated their programs. Of these, four-fifths used supervisory feedback as an evaluation method.

*Many companies used both their own and outside facilities for training. About 94 percent used company-owned facilities; 43 percent used other facilities.

*Only 2 percent of the 99,300 training instructors taught full time.

*About five-sixths of the establishments with training did not have a specific budget allocation for training.

Chapter 1. Occupational Training in 1974

Summary

Only 15 percent of all establishments in the four selected metalworking industries provided structured training in one of the 14 occupations or more in 1974. Structured training was more prevalent in large establishments; the proportion of establishments offering training generally increased as establishment employment size increased. For example, about one-fourth of the establishments with 250 to 499 employees provided structured training in the occupations, compared to nearly two-fifths of those with 500 to 999 employees and one-half of those with 1,000 or more (table 1).

The proportion of establishments that provided structured training varied by industry. About 18 percent of the establishments in the machinery, except electrical, industry reported this training compared with 12 percent in fabricated metal products, 12 percent in electrical machinery, and 10 percent in transportation equipment. Within an industry, the proportion of establishments offering training generally increased as employment size increased.

Of 133,700 employees enrolled in training in the 14 occupations in 1974, about 25 percent were being trained as welders, nearly 25 percent as machinists, and between 5 and 10 percent each as sheet-metal workers, electricians, tool and die makers, and maintenance mechanics. Only three of the remaining occupations accounted for more than 3 percent of the enrollees (table 2).

Table 2. Enrollments and completions: By occupation

(Number and percent distribution of employees in structured training in selected industries[1], 1974)

Occupation	Enrollments		Completions	
	Number	Percent	Number	Percent
Total, selected occupations	133,700	100.0	77,737	100.0
Crane, derrick, and hoist operator	1,964	1.5	1,838	2.4
Electrician	11,398	8.5	6,385	8.2
Electroplater	1,777	1.3	1,109	1.4
Filer, grinder, buffer, etc.	4,123	3.1	2,648	3.4
Layout worker, metal	3,443	2.6	2,452	3.2
Machine tool setter	4,490	3.4	3,481	4.5
Machinist	31,431	23.5	15,447	19.9
Mechanic, maintenance	7,419	5.5	4,112	5.3
Millwright	3,588	2.7	861	1.1
Patternmaker, metal/wood	1,829	1.4	318	.4
Plumber and/or pipefitter	6,024	4.5	3,066	3.9
Sheet-metal worker	12,138	9.1	8,483	10.9
Tool and die maker	10,250	7.7	2,728	3.5
Welder and flame-cutter	33,827	25.3	24,811	31.9

[1] Fabricated metal products; machinery, except electrical; electrical machinery; and transportation equipment.

NOTE: Because of rounding, sums of individual items may not equal totals.

Table 1. Establishments: By size and industry

(Establishments providing structured training for selected occupations as a percent of all establishments in industry, 1974)

Size	Total, selected industries	Fabricated metal products	Machinery, except electrical	Electrical machinery	Transportation equipment
Total providing training	14.7	12.3	18.2	11.7	10.4
1-19 employees	9.2	5.7	13.5	—	5.4
20-49 employees	21.4	18.1	31.5	8.1	6.1
50-99 employees	16.5	17.2	15.7	18.6	13.2
100-249 employees	18.7	20.5	20.1	15.7	16.3
250-499 employees	26.5	29.0	21.1	34.0	19.3
500-900 employees	37.9	63.9	29.9	29.9	32.8
1,000 employees or more	50.4	64.2	44.9	41.5	72.9

Table 3. Enrollments and completions: By industry

(Number and percent distribution of employees in structured training in selected occupations, 1974)

Industry	Enrollments		Completions	
	Number	Percent	Number	Percent
Total, selected industries	133,700	100.0	77,737	100.0
Fabricated metal products	26,667	19.9	15,642	20.1
Machinery, except electrical	48,129	36.0	26,643	34.3
Electrical machinery	13,588	10.2	7,019	9.0
Transportation equipment	45,316	33.9	28,433	36.6

About 77,700 employees completed training, or about 58 percent of those enrolled. The occupational distribution of employees who completed programs was about the same as that of enrollees.

The machinery, except electrical, industry accounted for 36 percent of the enrollees in the surveyed industries; transportation equipment, 34 percent; fabricated metal products, 20 percent; and electrical machinery, 10 percent. The distribution of completions by industry was similar to that of enrollments (table 3).

Enrollments and completions by industry

Enrollments for training in specific occupations varied widely by industry (table 4). Enrollments for plumber and/or pipefitter, sheet-metal worker, millwright, metal layout worker, welder, and electrician were largest in the transportation equipment industry, amounting to roughly one-half to two-thirds of all workers in training for these occupations. The machinery industry (except electrical) employed the largest number of trainees enrolled as patternmakers, machinists, tool and die makers, maintenance mechanics, and filers and grinders. The fabricated metal products industry was the primary employer of those enrolled in electroplater, crane operator, and machine tool setter programs. The electrical machinery industry was not the primary employer of enrollees in any of the selected occupations. Generally, the same industries that employed the most trainees in particular occupations also had the most workers complete programs in those occupations. (See appendix tables A-2 to A-11).

Purpose of training

Employees enrolled in qualifying training programs outnumbered those enrolled in skill improvement programs. Of the 133,700 employees enrolled in structured occupational training in 1974, about 95,000, or 71 percent, received qualifying training. Among the four industries, the proportion of enrollees who received qualifying training ranged from 77 percent in transportation equipment to 59 percent in electrical machinery (table 5). The range among the 14 occupations was considerably broader. About 92 percent of the enrollees in tool-and-die-maker programs received qualifying training compared with only 56 percent in maintenance mechanic programs (table 6).

Table 4. Enrollments and completions: By occupation and industry

(Percent distribution of employees in structured training, 1974)

Occupation	Enrollments					Completions				
	Total	Fabricated metal products	Machinery except electrical	Electrical machinery	Transportation equipment	Total	Fabricated metal products	Machinery except electrical	Electrical machinery	Transportation equipment
Total, selected occupations	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Crane, derrick, and hoist operator	1.5	3.2	1.4	.9	.6	2.4	4.9	2.6	1.8	.9
Electrician	8.5	5.9	3.3	20.6	12.1	8.2	5.2	1.2	24.2	12.5
Electroplater	1.3	4.4	.2	2.5	.4	1.4	4.2	.3	4.0	.4
Filer, grinder, buffer, etc	3.1	3.6	3.6	1.3	2.8	3.4	3.7	3.9	2.4	3.0
Layout worker, metal	2.6	3.1	1.4	1.0	4.0	3.2	4.2	2.1	1.6	3.9
Machine tool setter	3.4	5.5	2.9	2.9	2.7	4.5	6.8	3.7	3.6	4.2
Machinist	23.5	15.5	42.6	28.7	6.4	19.9	8.1	41.5	26.3	4.5
Mechanic, maintenance	5.5	10.1	6.8	4.5	1.8	5.3	9.7	7.3	2.6	1.6
Millwright	2.7	3.3	1.0	2.1	4.3	1.1	1.1	.3	2.3	1.5
Patternmaker, metal/wood	1.4	.2	3.3	.3	.3	.4	.2	.9	.5	.1
Plumber and/or pipefitter	4.5	2.5	2.4	2.8	8.5	3.9	.3	3.4	1.0	7.1
Sheet-metal worker	9.1	5.0	3.2	11.6	17.0	10.9	4.2	3.4	11.0	21.6
Tool and die maker	7.7	8.5	11.4	12.3	1.8	3.5	3.9	5.8	4.1	1.0
Welder and flamecutter	25.3	29.2	16.5	8.6	37.3	31.9	43.5	23.6	14.4	37.6

NOTE: Because of rounding, sums of individual items may not equal totals.

Table 5. Enrollments and completions: By purpose of training and industry

(Percent distribution of employees in structured training in selected occupations, 1974)

Industry	Enrollments			Completions		
	Total	Qualifying training	Skill improvement training	Total	Qualifying training	Skill improvement training
Total, selected industries	100.0	71.0	29.0	100.0	64.0	36.0
Fabricated metal products	100.0	74.7	25.3	100.0	65.6	34.4
Machinery, except electrical	100.0	66.5	33.5	100.0	59.5	40.5
Electrical machinery	100.0	59.3	40.7	100.0	51.2	48.8
Transportation equipment	100.0	77.1	22.9	100.0	70.6	29.4

Sixty-four percent of the trainees completed qualifying training programs compared with 36 percent of those in skill improvement programs.

Type of training

Employees receiving on-the-job training outnumbered those receiving off-production-site training. Of the 133,700 employees receiving structured training, 69 percent were enrolled in on-the-job training programs and 31 percent in off-production-site programs. Of the 77,700 who completed structured programs, 58 percent were in OJT and 42 percent in OPST (table 7).

On-the-job training predominated in three of the four metalworking industries. In electrical machinery, 88 percent of the enrollees and 85 percent of those completing training received on-the-job training. Ratios for the fabricated metal products industry were 81 percent for enrollees and 71 percent for those completing training; and for machinery, except electrical, 77 percent and 67 percent. In transportation equipment, on the other hand, off-production-site training accounted for more trainees than OJT. About 54 percent of the enrollees and 65 percent of the completions received OPST.

OJT accounted for particularly large proportions of trainees (more than 90 percent) in programs for tool and die maker, millwright, crane operator, electroplater, filer and grinder, and patternmaker. Welder was the only occupation for which a greater proportion (58 percent) of enrollees received training off the production site (table 8).

About 73 percent of the enrollees in qualifying training were in OJT programs. This ratio ranged from 97 percent in electrical machinery to 47 percent in transportation equipment. A lower proportion of the enrollees in skill improvement training were in OJT programs. About 74 percent of the skill improvement training enrollees in electrical equipment received OJT but only 43 percent in transportation equipment (table 9).

On-the-job programs accounted for three-fifths of the qualifying completions and slightly more than one-half of

Table 6. Enrollments and completions: by purpose of training and occupation

(Percent distribution of employees in structured training in selected industries[1], 1974)

Occupation	Enrollments			Completions		
	Total	Qualifying training	Skill improvement training	Total	Qualifying training	Skill improvement training
Total, selected occupations	100.0	71.0	29.0	100.0	64.0	36.0
Crane, derrick, and hoist operator	100.0	78.4	21.6	100.0	77.9	22.1
Electrician	100.0	63.1	36.9	100.0	49.5	50.5
Electroplater	100.0	82.7	17.3	100.0	83.4	16.5
Filer, grinder, buffer, etc	100.0	79.0	21.0	100.0	76.5	23.5
Layout worker, metal	100.0	75.2	24.8	100.0	69.9	30.1
Machine tool setter	100.0	69.7	30.3	100.0	65.1	34.9
Machinist	100.0	65.9	34.1	100.0	66.7	33.3
Mechanic, maintenance	100.0	55.6	44.4	100.0	33.5	66.5
Millwright	100.0	78.0	22.0	100.0	80.4	19.6
Patternmaker, metal/wood	100.0	87.6	12.4	100.0	77.4	22.6
Plumber and/or pipefitter	100.0	79.7	20.3	100.0	68.2	31.8
Sheet-metal worker	100.0	75.3	24.7	100.0	73.3	26.7
Tool and die maker	100.0	91.5	8.5	100.0	78.0	22.0
Welder and flamecutter	100.0	68.7	31.3	100.0	61.2	38.8

[1] Fabricated metal products; machinery, except electrical; electrical machinery; and transportation equipment.

NOTE: Because of rounding, sums of individual items may not equal totals.

Table 7. Enrollments and completions: By type of training and industry

(Number and percent distribution of employees in structured training in selected occupations, 1974)

Industry	Enrollments			Completions		
	Total	On-the-job training	Off-production-site training	Total	On-the-job training	Off-production-site training
	Number					
Total, selected industries	133,700	91,713	41,987	77,737	44,922	32,815
Fabricated metal products	26,667	21,712	4,955	15,642	11,157	4,485
Machinery, except electrical	48,129	37,161	10,968	26,643	17,936	8,708
Electrical machinery	13,588	11,914	1,674	7,019	5,970	1,049
Transportation equipment	45,316	20,925	24,391	28,433	9,860	18,573
	Percent distribution					
Total, selected industries	100.0	68.6	31.4	100.0	57.8	42.2
Fabricated metal products	100.0	81.4	18.6	100.0	71.3	28.7
Machinery, except electrical	100.0	77.2	22.8	100.0	67.3	32.7
Electrical machinery	100.0	87.7	12.3	100.0	85.1	14.9
Transportation equipment	100.0	46.2	53.8	100.0	34.7	65.3

NOTE: Because of rounding, sums of individual items may not equal totals.

the skill improvement completions. The pattern of completions among industries was similar to that of enrollments (table 10.)

By occupation, trainees in qualifying and skill improvement programs enrolled in on-the-job programs or off production-site programs varied widely. Most occupations had higher proportions of enrollments and completions in OJT programs for both purposes of training. Only welders had higher enrollments in OPST training for both qualifying and skill improvement training. In addition, electricians, metal layout workers, and patternmakers had higher OPST enrollments in skill improvement programs (tables 11 and 12).

Registered apprentices

Qualifying on-the-job programs included about 31,900 trainees enrolled in registered apprenticeship programs. Registered apprentices, therefore, accounted for about 46 percent of total enrollments in those programs. Similarly, qualifying OJT programs included about 8,400 workers

Table 8. Enrollments and completions: By type of training and occupation

(Percent distribution of employees in structured training in selected industries[1], 1974)

Occupation	Enrollments			Completions		
	Total	On-the-job training	Off-production-site training	Total	On-the-job training	Off-production-site training
Total, selected occupations	100.0	68.6	31.4	100.0	57.8	42.2
Crane, derrick, and hoist operator	100.0	92.1	7.9	100.0	92.5	7.5
Electrician	100.0	62.0	38.0	100.0	44.8	55.2
Electroplater	100.0	91.9	8.1	100.0	88.6	11.4
Filer, grinder, buffer, etc.	100.0	91.4	8.7	100.0	89.7	10.2
Layout worker, metal	100.0	52.5	47.5	100.0	47.2	52.8
Machine tool setter	100.0	82.2	17.8	100.0	78.3	21.7
Machinist	100.0	79.2	20.8	100.0	69.5	30.5
Mechanic, maintenance	100.0	83.3	16.7	100.0	74.3	25.7
Millwright	100.0	92.2	7.8	100.0	72.9	26.9
Patternmaker, metal/wood	100.0	90.8	9.2	100.0	86.2	13.8
Plumber and/or pipefitter	100.0	66.5	33.5	100.0	44.5	55.5
Sheet-metal worker	100.0	68.2	31.8	100.0	60.6	39.4
Tool and die maker	100.0	92.7	7.3	100.0	86.9	13.1
Welder and flamecutter	100.0	41.8	58.2	100.0	38.5	61.5

[1] Fabricated metal products; machinery, except electrical; electrical machinery; and transportation equipment.

NOTE: Because of rounding, sums of individual items may not equal totals.

Table 9. Enrollments in qualifying and skill improvement training: By type of training and industry

(Percent distribution of employees in structured training in selected occupations, 1974)

Industry	Qualifying training			Skill improvement training		
	Total	On-the-job training	Off-production-site training	Total	On-the-job training	Off-production-site training
Total, selected industries	100.0	72.9	27.1	100.0	58.1	41.9
Fabricated metal products	100.0	89.1	10.9	100.0	58.7	41.3
Machinery, except electrical	100.0	84.6	15.4	100.0	62.5	37.5
Electrical machinery	100.0	97.2	2.7	100.0	73.7	26.3
Transportation equipment	100.0	47.2	52.8	100.0	42.7	57.3

NOTE: Because of rounding, sums of individual items may not equal totals.

Table 10. Completions of qualifying and skill improvement training: By type of training and industry

(Percent distribution of employees in structured training in selected occupations, 1974)

Industry	Qualifying training			Skill improvement training		
	Total	On-the-job training	Off-production-site training	Total	On-the-job training	Off-production-site training
Total, selected industries	100.0	60.8	39.2	100.0	52.5	47.5
Fabricated metal products	100.0	82.1	17.9	100.0	50.9	49.1
Machinery, except electrical	100.0	74.0	26.0	100.0	57.5	42.5
Electrical machinery	100.0	94.9	5.1	100.0	74.7	25.3
Transportation equipment	100.0	33.3	66.7	100.0	38.0	62.0

Table 11. Enrollments in qualifying and skill improvement training: By type of training and occupation

(Percent distribution of employees in structured training in selected industries[1], 1974)

Occupation	Qualifying training			Skill improvement training		
	Total	On-the-job training	Off-production-site training	Total	On-the-job training	Off-production-site training
Total, selected occupations	100.0	72.9	27.1	100.0	58.1	41.9
Crane, derrick, and hoist operator	100.0	97.1	2.9	100.0	73.6	26.4
Electrician	100.0	70.1	29.9	100.0	48.1	51.9
Electroplater	100.0	96.7	3.3	100.0	69.2	31.2
Filer, grinder, buffer, etc.	100.0	96.8	3.2	100.0	70.9	29.1
Layout worker, metal	100.0	54.7	45.3	100.0	45.7	54.2
Machine tool setter	100.0	84.1	16.0	100.0	77.9	22.1
Machinist	100.0	82.8	17.2	100.0	72.1	27.9
Mechanic, maintenance	100.0	96.3	3.7	100.0	66.9	33.1
Millwright	100.0	92.1	7.9	100.0	92.3	7.7
Patternmaker, metal/wood	100.0	100.0	–	100.0	26.4	74.0
Plumber and/or pipefitter	100.0	62.3	37.7	100.0	82.9	17.1
Sheet-metal worker	100.0	68.8	31.2	100.0	66.2	33.8
Tool and die maker	100.0	95.4	4.6	100.0	63.9	36.1
Welder and flame cutter	100.0	45.2	54.8	100.0	34.2	65.8

[1] Fabricated metal products; machinery, except electrical; electrical machinery; and transportation equipment.

NOTE: Because of rounding, sums of individual items may not equal totals.

Table 12. Completions of qualifying and skill improvement training: By type of training and occupation

(Percent distribution of employees in structured training in selected industries,[1] 1974)

Occupation	Qualifying training			Skill improvement training		
	Total	On-the-job training	Off-production-site training	Total	On-the-job training	Off-production-site training
Total, selected occupations	100.0	60.8	39.2	100.0	52.5	47.5
Crane, derrick, and hoist operator	100.0	98.2	1.8	100.0	72.4	27.6
Electrician	100.0	40.9	59.1	100.0	48.6	51.4
Electroplater	100.0	96.4	3.5	100.0	48.9	51.1
Filer, grinder, buffer, etc	100.0	95.7	4.2	100.0	70.2	29.8
Layout worker, metal	100.0	47.1	52.9	100.0	47.4	52.6
Machine tool setter	100.0	77.9	22.1	100.0	79.0	21.0
Machinist	100.0	70.2	29.8	100.0	68.2	31.8
Mechanic, maintenance	100.0	92.0	8.0	100.0	65.4	34.6
Millwright	100.0	75.1	24.9	100.0	63.9	36.1
Patternmaker, metal/wood	100.0	100.0	–	100.0	38.9	61.1
Plumber and/or pipefitter	100.0	27.6	72.4	100.0	80.5	19.5
Sheet-metal worker	100.0	58.9	41.1	100.0	65.1	34.9
Tool and die maker	100.0	97.5	2.5	100.0	49.5	50.5
Welder and flamecutter	100.0	43.2	56.8	100.0	31.1	68.9

[1] Fabricated metal products; machinery, except electrical; electrical machinery; and transportation equipment.

NOTE: Because of rounding, sums of individual items may not equal totals.

completing apprenticeships, or about 28 percent of completions in those programs. Two occupations–tool and die maker, and machinist–accounted for nearly one-half of the apprentice enrollments (47 percent) and apprentice completions (44 percent).

Registered apprentices accounted for a very high proportion of trainees in some occupations. Between 70 and 90 percent of trainees for the following occupations were in registered apprenticeship programs: Tool and die maker, plumber, electrician, and millwright (table 13).

Table 13. Apprenticeship enrollments and completions: By occupation

(Employees in registered apprenticeship programs as a percent of all employees in qualifying on-the-job training in selected industries[1], 1974)

Occupation	Enrollments	Completions
Total, selected occupations	46.0	27.7
Crane, derrick, and hoist operator	0.3	0.3
Electrician	71.7	46.9
Electroplater	40.4	42.7
Filer, grinder, buffer, etc	4.3	3.1
Layout worker, metal	38.3	15.5
Machine tool setter	34.8	37.0
Machinist	42.7	27.6
Mechanic, maintenance	38.3	13.4
Millwright	70.5	34.8
Patternmaker, metal/wood	59.7	54.8
Plumber and/or pipefitter	85.7	77.0
Sheet-metal worker	34.7	26.9
Tool and die maker	87.0	83.1
Welder and flamecutter	18.2	14.0

[1] Fabricated metal products; machinery, except electrical; electrical machinery; and transportation equipment.

Length of training

On-the-job training programs were of much longer duration than off-production-site training programs. About two-thirds of the employees receiving qualifying OJT were in programs of 1 year duration or longer (a training program of 1,041-2,080 hours is usually considered a 1-year program). By comparison, one-half of the employees receiving qualifying OPST were in programs that lasted no more than 120 hours, and one-half of those receiving skill improvement OPST were in programs that lasted no more than 80 hours (tables 14 and 15).

Table 14. On-the-job training: By duration

(Percent distribution of employees in structured training in selected occupations and selected industries,[1] 1974)

Duration	Qualifying training	Skill improvement training
Total, all on-the-job training programs	100.0	100.0
1-80 hours	5.9	24.0
81-160 hours	6.0	13.4
161-320 hours	8.4	8.9
321-520 hours	2.6	7.1
521-1,040 hours	10.5	6.7
1,041-2,080 hours	8.4	2.8
2,081-4,160 hours	9.5	29.9
4,161-6,240 hours	11.9	2.7
6,241-8,320 hours	29.4	4.0
Over 8,320 hours	7.4	.5

[1] Fabricated metal products; machinery except electrical; electrical machinery; and transportation equipment.

Table 15. Off-production-site training: By duration

(Percent distribution of employees in structured training in selected occupations and selected industries,[1] 1974)

Duration	Qualifying training	Skill improvement training
Total, all off-production-site training programs	100.0	100.0
1–40 hours	8.7	17.9
41-80 hours	7.5	31.8
81-120 hours	34.3	14.4
121-160 hours	14.3	29.4
161-200 hours	1.0	1.2
201-240 hours	3.3	.3
241-520 hours	24.9	2.2
521-1,040 hours	3.0	2.8
Over 1,040 hours	3.0	–

[1] Fabricated metal products; machinery, except electrical; electrical machinery; and transportation equipment.

Chapter 2. Employers' Reasons for Training Decisions

Why training was provided

Employers providing structured occupational training for any of the 14 occupations were asked to indicate the reasons that influenced their decision to provide such training from the following list: (1) Necessary job skills can best be learned through company training program; (2) a tight labor market is anticipated for these job skills; (3) occupational training is consistent with employee's career development needs; (4) production methods have changed, are changing, or are expected to change, and accordingly, new skills must be developed by employees; (5) employees have inadequate educational and/or training backgrounds; and (6) other reasons. Employers could choose more than one reason but also were asked to indicate the primary reason.

The reason most frequently given by employers for providing training was that necessary job skills could best be learned through the employer's own training programs. About two-thirds of the establishments reported this as a reason, and about one-third recorded it as the primary reason (table 16). Inadequate educational and/or training backgrounds of employees was mentioned as a reason by about one-half of the establishments and as the primary reason by about one-fourth. Although one-third of the establishments indicated employees' career development needs as a reason for training, relatively few gave this as a primary reason. Relatively few establishments stated that training was given because production methods had changed or were expected to change. Almost one-fifth of the establishments cited "other reasons" for having structured training, and about one-eighth indicated these were primary reasons. In general, the pattern was similar among industries.

Why training was not provided

Employers not providing structured training related to any of the selected occupations were asked to indicate the reasons that influenced their decision not to provide such training from the following list: (1) Informal training satisfies needs; (2) prefer to recruit trained workers; (3) few skilled jobs—structured training is unnecessary; (4) production process shifts tasks away from skilled to lesser skilled workers who are already available; (5) cost of structured training is prohibitive; (6) risk of training employees and then losing them to other firms is too great; (7) establishment does not have the capability to provide structured training; and (8) other reasons. Employers could select more than one reason but also were asked to indicate the primary reason for not providing structured training.

More than one-half of the establishments not providing structured training reported that informal training satisfied their needs, and about one-third indicated that this was the primary reason for not having structured training (table 17). About three-eighths of the establishments revealed that structured training was unnecessary because they had only a few skilled jobs, and nearly one-fifth cited this as the primary reason. Almost three-tenths of the establishments preferred to recruit trained workers, and nearly one-sixth indicated this as the primary reason for not providing structured training. Although about one-fourth of the establishments stated that they did not have training capability, only one-tenth declared this as the primary reason for not providing structured training. Relatively few establishments were influenced by the following reasons: Cost of structured training is prohibitive; the risk of training employees and losing them to other firms is too great; or the production process shifts tasks away from skilled to lesser skilled workers who are already available. About one-sixth of the establishments had "other reasons" for not providing structured training, and about the same proportion indicated that these were primary. In general, the reasons for not providing training were similar across the selected industries.

Establishments not providing training in any of the 14 selected occupations were asked if they provided training in any other occupation. Only 5 percent of the establishments reported such training but the proportion increased significantly with establishment size, as shown in the following tabulation:

Size of establishment	*Percent providing training in other occupations*
All establishments not providing structured training in selected occupations	4.8
1-19 employees	3.3
20-49 employees	4.0
50-99 employees	4.2
100-249 employees	12.4
250-499 employees	12.8
500-999 employees	18.1
1,000 employees or more	25.2

Table 16. Reasons for providing structured training: By industry

(Establishments reporting reason as a percent of all establishments providing structured training in selected occupations, 1974)

Reason	Total, selected industries	Fabricated metal products	Machinery, except electrical	Electrical machinery	Transportation equipment
Total providing training	100.0	100.0	100.0	100.0	100.0
All reasons:[1]					
Necessary job skills can best be learned through company training program	66.4	60.8	72.1	58.4	54.1
Tight labor market is anticipated for these job skills	45.0	45.2	47.4	44.9	25.7
Occupational training is consistent with employee's career development needs	33.0	30.9	33.0	43.7	26.1
Production methods have changed, are changing, or are expected to change. Accordingly, new skills must be developed by employees	10.9	11.4	9.9	15.7	9.8
Employees have inadequate educational and/or training backgrounds and, therefore, require company training	51.4	36.3	58.0	51.9	55.7
Other	18.1	27.9	12.3	28.1	12.6
Primary reason:					
Necessary job skills can best be learned through company training program	35.3	41.2	33.0	36.7	29.2
Tight labor market is anticipated for these job skills	19.6	19.5	20.6	17.6	14.0
Occupational training is consistent with employee's career development needs	6.1	7.8	6.3	2.8	2.2
Production methods have changed, are changing, or are expected to change. Accordingly, new skills must be developed by employees	1.5	1.2	1.1	4.6	2.0
Employees have inadequate educational and/or training backgrounds and, therefore, require company training.	25.4	11.0	31.0	20.8	42.2
Other	12.1	19.3	7.9	17.5	10.4

[1] Data appearing under "all reasons" categories are nonadditive; many establishments listed more than one reason for providing structured occupational training.

NOTE: Because of rounding, sums of individual items may not equal totals.

Table 17. Reasons for not providing structured training: By industry

(Establishments reporting reason as a percent of all establishments not providing structured training in selected occupations, 1974)

Reason	Total, selected industries	Fabricated metal products	Machinery, except electrical	Electrical machinery	Transportation equipment
Total, not providing training	100.0	100.0	100.0	100.0	100.0
All reasons:[1]					
Informal training satisfies needs	53.5	59.5	49.7	49.5	54.8
Prefer to recruit trained workers	29.2	24.8	31.4	31.7	31.0
Few skilled jobs . . . structured training is unnecessary	37.4	44.7	29.6	44.1	38.4
Production process shifts tasks away from skilled jobs to lesser skilled workers who are already available	8.8	9.9	6.7	12.6	9.0
Cost of structured training is prohibitive	13.8	11.9	15.5	11.1	15.4
Risk of training employees and then losing them to other firms is too great	8.5	5.9	11.7	5.4	7.5
Establishment does not have the capability to provide structured training	24.8	26.1	26.3	16.4	24.2
Other	16.7	12.0	17.9	24.1	18.5
Primary reason:					
Informal training satisfies needs	33.1	41.3	26.9	32.2	33.3
Prefer to recruit trained workers	15.6	11.2	20.0	13.7	13.1
Few skilled jobs . . . structured training is unnecessary	18.6	20.7	13.4	23.4	19.5
Production process shifts tasks away from skilled jobs to lesser skilled workers who are already available	2.5	3.7	1.5	2.5	2.5
Cost of structured training is prohibitive	3.8	4.1	3.7	2.6	4.7
Risk of training employees and then losing them to other firms is too great	1.8	1.0	2.9	.1	2.0
Establishment does not have the capability to provide structured training	9.3	6.1	13.8	3.6	7.8
Other	15.3	11.9	15.8	21.9	17.0

[1] Data appearing under "all reasons" categories are nonadditive; many establishments listed more than one reason for not conducting training.

NOTE: Because of rounding, sums of individual items may not equal totals.

Chapter 3. Trainee Selection and Benefits

Factors used to select trainees

Employers were asked to report on the factors used to select employees for training. Employee interest was the factor checked most often by employers, both for qualifying training (76 percent), and skill improvement training (80 percent). A favorable work record was reported as a selection factor by 42 percent of the establishments providing skill improvement training. The proportion of employers citing these two reasons as a factor used in selecting trainees was similar for establishments of all sizes (table 18).

Tests (achievement, aptitude, etc.) were used as an employee selection factor more by establishments, particularly large establishments, providing qualifying training than skill improvement training. Length of service and affirmative action policies also were significant training selection factors. In general, large establishments used more selection criteria than small establishments.

Establishments were also requested to indicate the primary employee selection factor and "employee's interest" was checked most often for both purposes of training. The dominance of this factor generally decreased as establishment size increased for both qualifying training and skill improvement (table 19).

Establishments providing training were also asked if they had a collective bargaining agreement that stipulated factors for selecting employees for structured training programs. Only 19 percent of all establishments said yes to this question but the positive response increased significantly by establishment size. Less than one-tenth of the establishments with fewer than 50 employees reported having agreements that stipulated training selection factors but about three-fifths of those establishments with 500 employees or more had such an agreement. The wide difference is caused by the greater likelihood of a large establishment having a collective bargaining agreement. The proportion of establishments with a collective bargaining agreement stipulating

Table 18. Factors used to select employees for structured training: By size of establishment and purpose of training

(Establishments providing structured training for selected occupations reporting selection factors as a percent of all establishments reporting structured training, 1974)

Purpose of training and selection factor	All establishments in selected industries[1]	Number of employees in establishment						
		1-19	20-49	50-99	100-249	250-499	500-999	1,000 or more
Qualifying training:								
Length of service	24.5	7.9	31.3	13.7	32.9	36.5	66.7	46.8
Favorable work record	37.2	28.5	35.2	44.8	51.5	41.0	58.5	53.4
To meet or fulfill affirmative action policies	21.7	17.8	12.4	17.2	29.8	48.0	51.0	47.1
Employee's interest	76.2	79.0	78.6	67.6	68.5	62.7	84.2	78.3
Tests (achievement, aptitude, etc.)	17.1	4.0	15.3	19.8	25.2	40.7	38.2	55.0
Other	18.2	22.1	8.3	26.8	20.6	19.5	22.0	33.7
Skill improvement training:								
Length of service	24.3	3.2	30.3	42.5	35.6	24.2	41.7	42.8
Favorable work record	42.1	25.3	68.2	63.3	30.0	32.4	54.4	46.5
To meet or fulfill affirmative action policies	27.2	3.9	21.3	54.6	37.8	55.7	30.1	34.6
Employee's interest	80.2	100.0	100.0	68.2	49.0	49.0	72.8	75.5
Tests (achievement, aptitude, etc.)	4.7	5.4	–	4.0	5.4	5.0	13.6	11.9
Other	15.3	5.4	5.3	6.0	46.7	16.0	30.1	32.1

[1] Fabricated metal products; machinery, except electrical; electrical machinery; and transportation equipment.

NOTE: Data appearing in this table are nonadditive; many establishments selected trainees on the basis of more than one selection factor.

Table 19. Primary factor used to select employees for structured training: By size of establishment and purpose of training

(Percent distribution of establishments providing structured training for selected occupations reporting a primary selection factor, 1974)

Purpose of training and selection factor	All establishments in selected industries[1]	Number of employees in establishment						
		1-19	20-49	50-99	100-249	250-499	500-999	1,000 or more
Qualifying training:	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Length of service	8.6	1.8	11.1	6.1	12.9	13.2	24.4	17.2
Favorable work record	14.1	11.9	14.6	22.4	13.6	13.2	15.3	10.9
To meet or fulfill affirmative action policies	9.6	13.0	6.4	2.0	4.6	24.1	13.8	5.2
Employee's interest	48.6	57.7	53.3	42.3	36.4	32.1	22.9	26.5
Tests (achievement, aptitude, etc.)	6.6	4.0	5.7	4.1	15.9	5.2	8.0	23.1
Other	12.5	11.6	9.0	23.1	15.3	12.1	14.7	16.5
Skill improvement training:	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Length of service	5.4	–	–	1.1	24.8	4.4	8.7	10.7
Favorable work record	14.8	16.0	19.6	15.1	7.6	10.2	27.2	11.9
To meet or fulfill affirmative action policies	12.8	–	5.3	47.2	3.3	42.0	6.8	8.8
Employee's interest	56.2	84.0	69.7	26.5	33.3	34.1	27.2	39.0
Tests (achievement, aptitude, etc.)	1.3	–	–	4.0	3.8	–	–	2.5
Other	9.3	–	5.3	6.0	27.3	9.3	26.2	24.5

[1] Fabricated metal products; machinery, except electrical; electrical machinery; and transportation equipment.

NOTE: Because of rounding, sums of individual items may not equal totals.

training selection factors also differed by industry (table 20).

Benefits to employees who complete training

Employers providing training were asked about the benefits received by employees completing training. Almost three-fifths of the establishments reported that employees were promoted upon satisfactory completion. About two-fifths reported that employees return to their regular jobs and may receive higher pay. Similarly, two-fifths indicated that a certificate is awarded upon completion of the training, and nearly one-eighth revealed that employees received some other benefit (table 21).

Different patterns of benefits were recorded by size of establishment between employees completing qualifying training and skill improvement training. For example, in large establishments with 500 employees or more, about five-sixths of employers providing qualifying training indicated employees were promoted upon completion, whereas in establishments of similar size offering skill improvement training, only about one-fourth stated that employees were promoted upon completion of the training. Certificates also were more likely to be awarded in large establishments offering qualifying training.

Table 20. Establishments having collective bargaining agreements that stipulate training selection factors: By size of establishment and industry

(Establishments providing structured training for selected occupations reporting selection factors in agreements as a percent of all establishments reporting structured training, 1974)

Industry	All establishments	Number of employees in establishment						
		1-19	20-49	50-99	100-249	250-499	500-999	1,000 or more
Total, selected industries	18.7	7.4	9.6	34.3	26.8	30.7	62.1	57.8
Fabricated metal products	38.3	31.7	18.8	66.6	50.2	60.1	60.0	59.9
Machinery, except electrical	8.0	1.9	2.8	11.1	22.1	37.3	51.7	73.4
Electrical machinery	20.5	–	34.5	16.8	–	6.1	62.5	37.0
Transportation equipment	23.9	–	–	9.9	25.3	35.1	82.5	60.6

Table 21. Benefits received by employees completing structured training: By size of establishment and purpose of training

(Establishments providing structured training for selected occupations reporting benefit as a percent of all establishments reporting structured training, 1974)

Purpose of training and benefit received	All establishments in selected industries[1]	Number of employees in establishment						
		1-19	20-49	50-99	100-249	250-499	500-999	1,000 or more
All training:								
Promotion when training is completed	57.4	49.7	50.6	70.4	66.5	75.4	73.4	67.9
Return to regular job but may receive a higher pay rate	40.5	47.7	47.4	33.0	32.6	25.2	20.0	20.9
Completion certificate awarded	41.4	31.1	33.2	41.5	54.2	67.8	[illegible]	69.6
Other	11.7	16.2	6.4	7.9	10.5	10.2	[illegible]	19.9
Qualifying training:								
Promotion when training is completed	59.4	43.8	56.6	74.2	77.9	82.0	84.4	83.1
Return to regular job but may receive a higher pay rate	40.6	51.7	41.7	39.3	31.8	20.6	15.4	18.2
Completion certificate awarded	43.9	39.5	34.8	42.5	52.1	60.9	79.0	74.3
Other	12.1	17.9	7.8	4.7	11.9	7.9	15.6	16.4
Skill improvement training:								
Promotion when training is completed	51.7	67.7	21.3	62.0	53.2	63.4	25.0	26.1
Return to regular job but may receive a higher pay rate	40.7	35.5	75.0	20.5	33.8	33.0	40.4	29.9
Completion certificate awarded	34.1	5.4	25.3	39.6	57.0	79.8	56.7	56.1
Other	10.5	10.8	—	14.3	8.7	13.9	25.0	29.9

[1] Fabricated metal products; machinery, except electrical; electrical machinery; and transportation equipment.

NOTE: All columns are nonadditive; many establishments listed more than one benefit for employees who completed training.

Compensation for training time outside of regular work hours

One-third of the establishments having structured occupational training programs provided training outside of regular work hours. In general, the proportion increased as the size of establishment increased, as seen in the following tabulation:

Size of establishment	*Percent of establishments reporting training outside regular work hours*
All establishments in selected industries	33.5
1-19 employees	26.0
20-49 employees	30.9
50-99 employees	38.3
100-249 employees	45.3
250-499 employees	37.4
500-999 employees	53.4
1,000 employees or more	50.4

Trainees did not always get paid for time spent in training outside of regular hours. Less than one-third (30 percent) of the establishments providing such training indicated that employees were paid. In general, the proportion paying trainees for time spent outside of working hours did not vary significantly by size of establishment.

Training records

About one-fifth of the establishments did not maintain records of their employees' training experience. The lack of records appeared, to a great extent, in small establishments (table 22). In establishments with 1-19 employment, 36 percent reported that no training records were maintained, while only 3 percent with 1,000 employees or more stated that records were not kept. Small establishments represented a large part of the total number not maintaining records, as shown in the following tabulation:

Size of establishment	*Percent distribution*
All establishments not maintaining records	100
1-49 employees	85
50-249 employees	13
250-999 employees	1
1,000 employees or more	1

Table 22. Training Records: By size of establishment

(Establishments providing structured training for selected occupations reporting on item as a percent of all establishments reporting structured training, 1974)

Item	All establishments in selected industries[1]	Number of employees in establishment						
		1-19	20-49	50-99	100-249	250-499	500-999	1,000 or more
No record maintained	22.4	36.2	21.5	14.3	15.6	0.6	2.0	3.0
Records maintained by:								
Personnel department	37.5	12.2	40.0	36.8	61.1	82.0	75.7	72.3
Training department	5.9	2.2	3.0	4.0	10.2	8.0	18.0	43.6
Payroll department	18.2	17.0	20.5	25.2	22.6	6.0	6.3	11.8
Employee's supervisor	42.4	45.8	29.8	47.0	42.8	52.9	68.0	50.6
Other	6.0	4.7	8.2	2.2	5.1	7.6	5.5	10.0

[1] Fabricated metal products; machinery, except electrical; electrical machinery; and transportation equipment.

NOTE: All columns are nonadditive; many establishments listed more than one department in which training records were maintained.

As expected, in small firms the employee's supervisor generally maintained records. In large establishments the personnel department was the primary recordkeeper, although about one-half of the establishments with 1,000 employees or more offering structured occupational training also reported that the employee's supervisor kept records. Records were also kept in training departments, primarily in large establishments.

Chapter 4. Training Content, Facilities, and Staff

Content of training programs

Employers were asked to identify the subject matter of the training for the occupation for which the largest number of persons were enrolled, for both qualifying and skill improvement training. The most often listed training subjects were "care and use of tools and equipment", "machine operation", "blueprint reading/drafting", and "trade mathematics" (table 23). Relatively few employers provided training in leadership, communication skills, and labor and materials estimating. In general, subjects were listed in the same order of importance for both qualifying and skill improvement training and for all establishment sizes.

Development of course content

The primary group helping plan the content of the training programs was department heads and supervisors. About three-fifths of the establishments providing training indicated that department heads and supervisors helped plan company training programs. Other groups playing a significant role were education specialists, union management committees, and trade associations (table 24). Union management committees, of course, were most prevalent in large establishments, which are more likely to have collective bargaining agreements.

Program evaluation

About three-fourths of the establishments indicated that management periodically evaluated company training programs. The proportion of establishments reporting periodic evaluations increased as establishment size increased. About 9 out of 10 establishments with 1,000 employees or more periodically evaluated their training programs (table 25). More than four-fifths of these establishments mentioned supervisory feedback as an evaluation method. Only larger firms tend to use, to any great extent, followup studies of trainees, examinations, and outside evaluations by educators and consultants (table 26).

Training facilities and staff

Establishments were asked to identify the company-owned facilities or sites where training was given from the following list: The production shop of the establishment; a classroom in the establishment; an area of the establishment separate from the production shop, but equipped and designed specifically for training; and other company-owned facility.

Establishments also were asked to identify training facilities or sites not owned by the company: Adult vocational or technical schools, high schools, community colleges, labor union facilities, vendors' or manufacturers' schools, correspondence schools, and other non-owned training facilities.

Table 23. Subject matter of structured training: By purpose and type of training

(Establishments reporting subject matter as a percent of all establishments providing structured training in selected occupations, 1974)

Subject matter	Qualifying training		Skill improvement training	
	On-the-job training	Off-production-site training	On-the-job training	Off-production-site training
All establishments in selected industries[1]	100.0	100.0	100.0	100.0
Production and quality control	42.9	25.1	73.7	22.1
Care and use of tools and equipment	91.6	49.9	85.3	54.3
Trade mathematics	53.7	42.8	26.0	69.8
Blueprint reading/drafting	72.3	53.7	78.7	74.4
Layout and planning procedures	50.9	42.0	28.1	40.6
Machine operation	83.7	51.2	81.0	80.0
Estimating labor and material requirements	14.2	5.2	11.6	14.7
Safety procedures	82.1	39.2	58.8	38.5
Preventive maintenance, repair, and inspection	50.7	15.3	45.0	36.3
Work attitudes and habits	65.6	29.4	68.3	17.2
Leadership training	7.9	3.0	10.3	4.2
Communication skills	12.3	10.6	13.7	6.2
Other subject matter	3.2	17.2	3.9	5.2

[1] Fabricated metal products; machinery, except electrical; electrical machinery; and transportation equipment.

NOTE: All columns are nonadditive; many establishments listed more than one job skill taught in structured occupational training programs.

Table 24. Groups helping to determine subject matter of structured training: By size of establishment

(Establishments reporting consulting help as a percent of all establishments providing structured training in selected occupations, 1974)

Consulting group	All establishments in selected industries[1]	Number of employees in establishment						
		1-19	20-49	50-99	100-249	250-499	500-999	1,000 or more
Total providing training	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Trade associations	15.4	9.8	22.5	13.6	6.8	27.0	22.2	11.1
Vendors or manufacturers of plant equipment	10.7	10.0	14.1	10.1	5.3	1.0	13.7	17.8
Union-management committees	18.6	13.7	13.1	22.3	17.4	27.0	47.6	51.0
Vocational or education specialists	29.2	15.5	36.5	26.0	23.9	56.9	49.9	48.8
In-plant analysis by department heads and supervisors	61.9	63.2	65.5	59.5	53.5	49.3	53.8	77.5
Consulting firms	.6	–	.5	1.5	.7	.7	.8	3.6
Other	14.0	10.8	15.2	9.4	30.5	10.4	12.6	13.1

[1] Fabricated metal products; machinery, except electrical; electrical machinery; and transportation equipment.

NOTE: All columns are nonadditive; many establishments used more than one consulting group to help determine the course content of occupational training programs.

Table 25. Evaluation of training: By size of establishment

(Percent distribution of establishments providing structured training for selected occupations reporting evaluation of training, 1974)

Item	All establishments in selected industries[1]	Number of employees in establishment						
		1-19	20-49	50-99	100-249	250-499	500-999	1,000 or more
Total providing training	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Programs evaluated by management periodically	75.5	68.5	74.0	76.5	85.7	90.5	81.1	91.4
Programs not evaluated	24.5	31.5	26.0	23.5	14.3	9.5	18.9	8.6

[1] Fabricated metal products; machinery, except electrical; electrical machinery; and transportation equipment.

Table 26. Evaluation methods: By size of establishment

(Establishments reporting method as a percent of all establishments providing structured training in selected occupations, 1974)

Method	All establishments in selected industries[1]	Number of employees in establishment						
		1-19	20-49	50-99	100-249	250-499	500-999	1,000 or more
Total evaluating training programs	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Supervisory feedback	82.6	68.3	91.7	93.1	74.1	92.3	92.1	93.9
Examination of trainee to test degree of skill acquired	22.2	12.0	17.5	27.5	33.8	25.2	39.6	58.4
Followup studies of trainee	30.4	18.6	37.7	28.6	41.9	27.2	35.5	44.9
Outside evaluation	13.5	11.2	16.8	8.6	7.9	10.5	28.6	22.6
Other	13.2	15.0	8.8	16.8	4.5	25.6	22.5	11.5

[1] Fabricated metal products; machinery, except electrical; electrical machinery; and transportation equipment.

NOTE: All columns are nonadditive; many establishments utilized more than one method of evaluating the course content of occupational training programs.

Table 27. Training facilities: By size of establishment

(Establishments reporting facility as a percent of all establishments providing structured training in selected occupations, 1974)

Facility	All establishments in selected industries[1]	Number of employees in establishment						
		1-19	20-49	50-99	100-249	250-499	500-999	1,000 or more
Total reporting training facilities	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Company-owned facility	93.7	95.6	96.5	88.2	83.4	90.5	97.1	96.1
Production shop	91.7	95.6	95.0	86.3	79.6	86.1	89.0	87.7
Classroom	7.7	–	3.4	3.0	19.0	22.5	25.2	49.1
Equipped training room	2.9	–	–	3.0	3.0	4.6	18.3	27.7
Other company facility	3.4	–	6.0	7.6	2.9	3.5	4.1	2.2
Other than company-owned facility	43.5	37.8	40.7	40.9	41.3	64.0	67.6	79.4
Adult education center	27.0	19.0	27.8	18.6	30.5	49.9	52.6	41.0
High school	4.9	1.5	3.1	12.1	8.5	9.0	7.0	12.5
Community college	11.7	12.9	10.5	4.5	8.7	15.8	15.9	24.5
Labor union facility	1.5	1.5	1.3	3.9	–	1.1	–	3.3
Vendor's school	3.4	3.8	1.0	4.3	1.7	4.5	9.2	10.1
Correspondence school	2.2	1.5	–	3.0	.8	8.9	5.6	11.9
Other	1.7	1.5	2.0	1.5	.8	1.4	3.2	1.5

[1] Fabricated metal products; machinery, except electrical; electrical machinery; and transportation equipment.

NOTE: All columns are nonadditive; many establishments used more than one size or facility in which to conduct structured occupational training.

Company-owned training facilities were used by 94 percent of the establishments providing training, and facilities not owned were used by 44 percent. Production shops outnumbered all other company-owned facilities combined. About 92 percent of the establishments used production shops as training facilities, 8 percent used classrooms, and 3 percent used areas separate from the production shop which were equipped specifically for training.

Adult vocational or technical school facilities were used by 27 percent of the establishments using other than company facilities. Community colleges were identified as training facilities by 12 percent. Other outside facilities, such as labor union facilities and correspondence schools, were mentioned by a relatively small percent of establishments (table 27).

Company-owned classrooms and areas equipped specifically for training were concentrated in larger establishments. None of the establishments with fewer than 20 employees had these training facilities. Small establishments, however, did use school facilities that were not company owned. Establishments with fewer than 20 employees, for example, constituted about two-fifths of the establishments that used vendors' or manufacturers' schools and nearly two-fifths of those using community colleges (table 28).

About 99,300 persons taught 133,700 trainees in establishments providing structured training—about three-fourths as many teachers as students. However, almost all the instructors (98 percent) were supervisors and craft workers

Table 28. Outside training facilities: By size of establishment

(Percent distribution of establishments providing structured training for selected occupations reporting use of outside training facilities, 1974)

Establishment size	All establishments in selected industries[1]	Outside facility						
		Adult education center	High school	Community college	Labor union facility	Vendor's school	Correspondence school	Other
Total using outside training facility	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1-19 employees	30.4	24.6	10.6	38.5	33.5	39.8	23.3	31.2
20-49 employees	28.3	31.2	18.9	27.3	25.4	9.2	–	37.0
50-99 employees	9.8	7.2	25.7	4.0	26.6	13.4	14.1	9.5
100-249 employees	9.4	11.0	16.9	7.2	–	5.0	3.6	4.8
250-499 employees	8.9	11.2	11.1	8.2	4.6	8.1	24.5	5.3
500-999 employees	6.7	8.4	6.1	5.9	–	11.8	10.8	8.5
1,000 or more employees	6.4	6.5	10.8	8.9	9.2	12.8	23.3	3.7

[1] Fabricated metal products; machinery, except electrical; electrical machinery; and transportation equipment.

NOTE: Because of rounding, sums of individual items may not equal totals.

Table 29. Training for instructors: By size of establishment

(Percent distribution of establishments providing structured training for selected occupations reporting training for instructors, 1974)

Item	All establishments in selected industries[1]	Number of employees in establishment						
		1-19	20-49	50-99	100-249	250-499	500-999	1,000 or more
Total providing structured training	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Provide training for instructors	12.0	7.1	11.3	16.2	12.4	10.7	23.9	32.5
Do not provide training for instructors	88.0	92.9	88.7	83.8	87.6	89.3	76.1	67.5

[1] Fabricated metal products; machinery, except electrical; electrical machinery; and transportation equipment.

teaching part time. About one-half of the establishments with structured training indicated that some of the training was given by trainers who were not on their payrolls, such as those employed in company training centers, colleges, and vocational schools.

About 12 percent of the establishments with structured occupational training programs gave instructors some training. In general, large establishments tended to provide more training for instructors (table 29).

Training costs

The great interest in employer training costs prompted a survey question about the availability of training cost records.

About five-sixths of the establishments providing structured training did not have a specific budget allocation for training. Even among large establishments, the proportion without an allocation was sizable, although a larger proportion did have a budget specifically for training (table 30).

Establishments with specific budget allocations were asked to identify specific training cost items for which separate and specific costs were available. Of all establishments, 10 percent indicated that costs of tuition, books, supplies, etc. could be separately identified in training cost records; this was the highest percent of any specific item for all establishments in the four industries combined. Larger establishments, with a greater tendency to have an established budget than smaller establishments, also had a higher percentage of establishments reporting the availability of records. For any specific item, however, no more than one-half of the establishments in any size group reported that cost data were available.

Table 30. Training cost records: By size of establishment

(Establishments reporting training cost records as a percent of all establishments providing structured training in selected occupations, 1974)

Item	All establishments in selected industries[1]	Number of employees in establishment						
		1-19	20-49	50-99	100-249	250-499	500-999	1,000 or more
Total providing training	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No training budget allocation	83.3	95.9	86.9	81.3	72.6	65.6	52.6	37.4
With specific training budget allocation[2]	16.7	4.1	13.1	18.7	27.4	34.4	47.4	62.6
No separate cost records kept	3.6	4.1	3.4	2.8	2.5	2.2	6.4	4.9
Tuition, books, supplies, etc.	10.0	—	7.0	5.8	21.7	27.9	35.6	46.9
Trainee transportation	1.6	—	.5	—	7.8	4.2	2.9	7.3
Personnel costs (instructors, support staff, etc.)	5.2	—	4.1	5.6	8.6	10.3	15.5	29.7
Cost of training facility	2.7	—	1.5	4.5	5.8	5.8	3.7	15.9
Overhead costs	4.1	—	2.6	8.6	8.3	6.5	4.6	24.1
Labor cost of trainees	6.9	.9	2.0	12.9	11.0	13.2	23.4	42.4
Other	2.2	.9	1.7	—	10.4	.6	3.1	4.1

[1] Fabricated metal products; machinery, except electrical; electrical machinery; and transportation equipment.

[2] Data appearing under this category are nonadditive; many establishments listed more than one training cost item for which specific costs may be identifiable.

Appendix A. Reference Tables

Table A-1. Occupational employment, January 1975, and completions of structured training in selected occupations, 1974

Occupation	Estimated occupational employment January 1975	Completions of structured occupational training, 1974	Completions as a percent of occupational employment
Total, selected occupations in metalworking industries (SIC 34-37)	1,286,200	77,737	6.0
Crane, derrick, and hoist operators	23,500	1,838	7.8
Electricians	62,450	6,385	10.2
Electroplaters	27,650	1,109	4.0
Filers, grinders, buffers, etc	104,900	2,648	2.5
Layout workers, metal	36,950	2,452	6.6
Machine tool setters	62,450	3,481	5.6
Machinists	359,600	15,447	4.3
Mechanics, maintenance	77,950	4,112	5.3
Millwrights	28,450	861	3.0
Patternmakers, metal/wood	17,800	318	1.8
Plumbers and/or pipefitters	28,400	3,066	10.8
Sheet-metal workers	114,100	8,483	7.4
Tool and die makers	121,650	2,728	2.2
Welders and flamecutters	220,400	24,811	11.3

NOTE: Because of rounding, sums of individual items may not equal totals.

Table A-2. Enrollments: By occupation and purpose and type of training—Total, selected industries[1]

(Number of employees in structured training in selected occupations, 1974)

Purpose and type of training	Total, selected occupations	Crane operators	Electricians	Electroplaters	Filers and grinders
All structured training	133,700	1,964	11,398	1,777	4,123
On the job	91,713	1,809	7,063	1,633	3,767
Off production site	41,987	156	4,335	144	357
Qualifying training	94,951	1,539	7,193	1,469	3,256
On the job	69,194	1,495	5,040	1,421	3,152
Off production site	25,757	44	2,153	48	104
Skill improvement training	38,749	425	4,205	308	867
On the job	22,520	313	2,023	213	615
Off production site	16,229	112	2,182	96	252

Purpose and type of training	Layout workers, metal	Machine tool setters	Machinists	Mechanics, maintenance	Millwrights
All structured training	3,443	4,490	31,431	7,419	3,588
On the job	1,807	3,689	24,888	6,179	3,307
Off production site	1,636	801	6,543	1,240	281
Qualifying training	2,588	3,129	20,704	4,127	2,799
On the job	1,415	2,630	17,153	3,976	2,579
Off production site	1,173	500	3,551	151	220
Skill improvement training	855	1,360	10,727	3,292	789
On the job	391	1,059	7,735	2,203	728
Off production site	463	301	2,992	1,089	61

See footnote at end of table.

Table A-2. Enrollments: By occupation and purpose and type of training—Total, selected industries[1] —Continued

(Number of employees in structured training in selected occupations, 1974)

Purpose and type of training	Pattern-makers	Plumbers	Sheet-Metal workers	Tool and die makers	Welders
All structured training	1,829	6,024	12,138	10,250	33,827
On the job	1,661	4,006	8,274	9,501	14,129
Off production site	168	2,017	3,864	748	19,698
Qualifying training	1,602	4,802	9,142	9,375	23,227
On the job	1,602	2,994	6,291	8,942	10,505
Off production site	–	1,808	2,851	433	12,722
Skill improvement training	227	1,222	2,996	875	10,601
On the job	60	1,013	1,983	559	3,624
Off production site	168	209	1,013	316	6,976

[1] Fabricated metal products; machinery, except electrical; electrical machinery; and transportation equipment.

NOTE: Because of rounding, sums of individual items may not equal totals.

Table A-3. Enrollments: By occupation and purpose and type of training—Fabricated metal products industry

(Number of employees in structured training in selected occupations, 1974)

Purpose and type of training	Total, selected occupations	Crane operators	Electri-cians	Electro-platers	Filers and grinders
All structured training	26,667	861	1,572	1,172	973
On the job	21,712	861	1,270	1,163	972
Off production site	4,955	–	302	9	1
Qualifying training	19,924	746	799	1,043	920
On the job	17,757	746	745	1,034	920
Off production site	2,167	–	54	9	–
Skill improvement training	6,743	115	773	129	54
On the job	3,955	115	525	129	53
Off production site	2,788	–	248	–	1

Purpose and type of training	Layout workers, metal	Machine tool setters	Machinists	Mechanics, maintenance	Millwrights
All structured training	816	1,456	4,123	2,705	873
On the job	816	1,327	3,854	2,089	845
Off production site	–	129	270	616	29
Qualifying training	489	867	3,442	1,755	513
On the job	489	815	3,389	1,724	495
Off production site	–	52	53	31	18
Skill improvement training	327	588	681	950	360
On the job	327	512	464	365	349
Off production site	–	76	217	585	11

Purpose and type of training	Pattern-makers	Plumbers	Sheet-metal workers	Tool and die makers	Welders
All structured training	61	657	1,342	2,256	7,800
On the job	57	657	1,316	2,124	4,362
Off production site	4	–	26	132	3,438
Qualifying training	40	538	1,260	2,122	5,388
On the job	40	538	1,260	2,017	3,545
Off production site	–	–	–	106	1,844
Skill improvement training	21	119	82	134	2,411
On the job	17	119	56	108	817
Off production site	4	–	26	26	1,595

NOTE: Because of rounding, sums of individual items may not equal total.

Table A-4. Enrollments: By occupation and purpose and type of training—Machinery, except electrical, industry

(Number of employees in structured training in selected occupations, 1974)

Purpose and type of training	Total, selected occupations	Crane operators	Electri-cians	Electro-platers	Filers and grinders
All structured training	48,129	683	1,567	84	1,720
On the job	37,161	578	1,366	84	1,545
Off production site	10,968	106	201	–	174
Qualifying training	32,027	498	1,292	84	1,187
On the job	27,104	498	1,214	84	1,082
Off production site	4,922	–	79	–	104
Skill improvement training	16,102	186	274	–	533
On the job	10,057	80	152	–	463
Off production site	6,045	106	122	–	70

Purpose and type of training	Layout workers metal	Machine tool setters	Machinists	Mechanics, maintenance	Millwrights
All structured training	694	1,407	20,515	3,275	469
On the job	188	1,280	15,717	3,079	462
Off production site	506	127	4,798	196	7
Qualifying training	263	1,158	13,896	1,514	414
On the job	178	1,085	10,990	1,475	410
Off production site	85	73	2,906	39	4
Skill improvement training	432	249	6,619	1,761	55
On the job	11	196	4,726	1,604	52
Off production site	421	53	1,893	157	3

Purpose and type of training	Pattern-makers	Plumbers	Sheet-metal workers	Tool and die makers	Welders
All structured training	1,606	1,156	1,522	5,499	7,932
On the job	1,461	1,047	1,475	4,996	3,883
Off production site	145	109	47	503	4,049
Qualifying training	1,437	283	1,331	5,000	3,670
On the job	1,437	281	1,331	4,736	2,304
Off production site	–	2	–	265	1,366
Skill improvement training	169	873	191	498	4,262
On the job	24	766	144	260	1,579
Off production site	145	107	47	238	2,683

NOTE: Because of rounding, sums of individual items may not equal totals.

Table A-5. Enrollments: By occupation and purpose and type of training—Electrical machinery industry

(Number of employees in structured training in selected occupations, 1974)

Purpose and type of training	Total, selected occupations	Crane operators	Electri-cians	Electro-platers	Filers and grinders
All structured training	13,588	127	2,798	345	175
On the job	11,914	120	2,286	255	161
Off production site	1,674	7	512	90	14
Qualifying training	8,059	120	1,213	272	157
On the job	7,837	120	1,163	233	157
Off production site	221	–	50	39	–
Skill improvement training	5,529	7	1,585	73	18
On the job	4,077	–	1,123	22	5
Off production site	1,452	7	462	52	14

Purpose and type of training	Layout workers, metal	Machine tool setters	Machinists	Mechanics, maintenance	Millwrights
All structured training	142	389	3,894	607	279
On the job	140	284	3,407	535	239
Off production site	2	105	487	72	40
Qualifying training	133	271	1,260	389	234
On the job	133	271	1,187	376	232
Off production site	–	–	74	13	2
Skill improvement training	9	118	2,634	219	45
On the job	7	13	2,221	159	7
Off production site	2	105	413	59	37

Purpose and type of training	Pattern-makers	Plumbers	Sheet-metal workers	Tool and die makers	Welders
All structured training	43	376	1,575	1,666	1,172
On the job	24	376	1,524	1,625	936
Off production site	19	–	50	41	236
Qualifying training	19	363	1,503	1,555	568
On the job	19	363	1,494	1,520	568
Off production site	–	–	9	35	–
Skill improvement training	23	13	71	111	604
On the job	5	13	30	105	368
Off production site	19	–	41	6	236

NOTE: Because of rounding, sums of individual items may not equal totals.

Table A-6. Enrollments: By occupation and purpose and type of training—Transportation equipment industry

(Number of employees in structured training in selected occupations, 1974)

Purpose and type of training	Total, selected occupations	Crane operators	Electri-cians	Electro-platers	Filers and grinders
All structured training	45,316	293	5,461	176	1,256
On the job	20,925	249	2,141	132	1,088
Off production site	24,391	44	3,320	44	168
Qualifying training	34,942	175	3,888	70	993
On the job	16,495	131	1,917	70	993
Off production site	18,447	44	1,971	–	–
Skill improvement training	10,375	118	1,573	106	263
On the job	4,431	118	224	62	95
Off production site	5,944	–	1,350	44	168

Purpose and type of training	Layout workers, metal	Machine tool setters	Machinists	Mechanics, maintenance	Millwrights
All structured training	1,790	1,238	2,898	832	1,967
On the job	663	797	1,910	476	1,761
Off production site	1,127	441	988	357	205
Qualifying training	1,704	832	2,105	470	1,638
On the job	616	458	1,586	401	1,442
Off production site	1,088	374	519	69	196
Skill improvement training	86	406	793	363	329
On the job	47	339	324	75	319
Off production site	39	67	469	288	9

Purpose and type of training	Pattern-makers	Plumbers	Sheet-metal workers	Tool and die makers	Welders
All structured training	119	3,835	7,699	829	16,923
On the job	119	1,927	3,958	756	4,948
Off production site	–	1,908	3,741	73	11,975
Qualifying training	105	3,618	5,047	697	13,600
On the job	105	1,812	2,206	670	4,088
Off production site	–	1,806	2,842	27	9,512
Skill improvement training	13	217	2,652	132	3,323
On the job	13	115	1,753	86	860
Off production site	–	102	899	46	2,463

NOTE: Because of rounding, sums of individual items may not equal totals.

Table A-7. Completions: By occupation and purpose and type of training—Total, selected industries[1]

(Number of employees in structured training in selected occupations, 1974)

Purpose and type of training	Total, selected occupations	Crane operators	Electricians	Electroplaters	Filers and grinders
All structured training	77,737	1,838	6,385	1,109	2,648
On the job	44,922	1,700	2,858	983	2,376
Off production site	32,815	138	3,527	126	271
Qualifying training	49,770	1,432	3,159	925	2,027
On the job	30,245	1,406	1,291	892	1,940
Off production site	19,525	26	1,868	32	86
Skill improvement training	27,967	406	3,298	184	621
On the job	14,678	294	1,567	90	436
Off production site	13,290	112	1,659	94	185

Purpose and type of training	Layout workers, metal	Machine tool setters	Machinists	Mechanics, maintenance	Millwrights
All structured training	2,452	3,481	15,447	4,112	861
On the job	1,157	2,726	10,737	3,055	628
Off production site	1,295	755	4,710	1,057	232
Qualifying training	1,714	2,267	10,303	1,376	692
On the job	808	1,767	7,231	1,266	520
Off production site	907	500	3,073	110	172
Skill improvement training	738	1,214	5,143	2,736	169
On the job	350	959	3,506	1,789	108
Off production site	388	255	1,637	947	61

Purpose and type of training	Pattern-makers	Plumbers	Sheet-metal workers	Tool and die makers	Welders
All structured training	318	3,066	8,483	2,728	24,811
On the job	274	1,363	5,137	2,370	9,558
Off production site	44	1,703	3,346	357	15,253
Qualifying training	246	2,090	6,218	2,127	15,194
On the job	246	577	3,663	2,073	6,565
Off production site	–	1,513	2,555	54	8,629
Skill improvement training	72	976	2,265	600	9,616
On the job	28	786	1,474	297	2,993
Off production site	44	190	791	303	6,623

[1] Fabricated metal products; machinery, except electrical; electrical machinery; and transportation equipment.

NOTE: Because of rounding, sums of individual items may not equal totals.

Table A-8. Completions: By occupation and purpose and type of training—Fabricated metal products industry

(Number of employees in structured training in selected occupations, 1974)

Purpose and type of training	Total, selected occupations	Crane operators	Electri-cians	Electro-platers	Filers and grinders
All structured training	15,642	760	821	658	579
On the job	11,157	760	562	658	578
Off production site	4,485	–	259	–	1
Qualifying training	10,259	662	211	623	543
On the job	8,420	662	172	623	543
Off production site	1,839	–	39	–	–
Skill improvement training	5,382	98	610	35	36
On the job	2,737	98	390	35	35
Off production site	2,645	–	220	–	1

Purpose and type of training	Layout workers, metal	Machine tool setters	Machinists	Mechanics, maintenance	Millwrights
All structured training	655	1,056	1,271	1,519	177
On the job	655	974	1,023	952	152
Off production site	–	82	249	567	25
Qualifying training	355	547	731	780	98
On the job	355	495	690	749	85
Off production site	–	52	41	31	14
Skill improvement training	300	509	541	739	79
On the job	300	479	333	203	68
Off production site	–	30	208	536	11

Purpose and type of training	Pattern-makers	Plumbers	Sheet-metal workers	Tool and die makers	Welders
All structured training	29	44	661	604	6,806
On the job	25	44	636	574	3,564
Off production site	4	–	26	30	3,242
Qualifying training	8	28	626	525	4,522
On the job	8	28	626	510	2,875
Off production site	–	–	–	15	1,647
Skill improvement training	21	16	35	79	2,284
On the job	17	16	9	64	690
Off production site	4	–	26	15	1,595

NOTE: Because of rounding, sums of individual items may not equal totals.

Table A-9. Completions: By occupation and purpose and type of training—Machinery, except electrical, industry

(Number of employees in structured training in selected occupations, 1974)

Purpose and type of training	Total, selected occupations	Crane operators	Electricians	Electroplaters	Filers and grinders
All structured training	26,643	681	307	68	1,050
On the job	17,936	575	201	68	901
Off production site	8,708	106	106	–	149
Qualifying training	15,840	498	221	68	665
On the job	11,728	498	173	68	579
Off production site	4,111	–	48	–	86
Skill improvement training	10,804	183	86	–	385
On the job	6,207	78	28	–	322
Off production site	4,597	106	58	–	62

Purpose and type of training	Layout workers, metal	Machine tool setters	Machinists	Mechanics, maintenance	Millwrights
All structured training	564	980	11,047	1,958	89
On the job	166	854	7,525	1,806	85
Off production site	398	127	3,523	151	3
Qualifying training	206	792	8,104	370	85
On the job	159	718	5,487	333	85
Off production site	46	73	2,617	37	–
Skill improvement training	358	188	2,943	1,587	3
On the job	7	135	2,038	1,473	–
Off production site	351	53	905	114	3

Purpose and type of training	Pattern-makers	Plumbers	Sheet-metal workers	Tool and die makers	Welders
All structured training	229	916	912	1,551	6,291
On the job	208	807	894	1,302	2,543
Off production site	21	109	19	249	3,748
Qualifying training	208	56	890	1,237	2,439
On the job	208	54	890	1,227	1,249
Off production site	–	2	–	11	1,191
Skill improvement training	21	860	23	314	3,852
On the job	–	753	4	76	1,294
Off production site	21	107	19	238	2,558

NOTE: Because of rounding, sums of individual items may not equal totals.

Table A-10. Completions: By occupation and purpose and type of training—Electrical machinery industry

(Number of employees in structured training in selected occupations, 1974)

Purpose and type of training	Total, selected occupations	Crane operators	Electri-cians	Electro-platers	Filers and grinders
All structured training	7,019	127	1,700	282	170
On the job	5,970	120	1,495	199	157
Off production site	1,049	7	205	84	14
Qualifying training	3,594	120	525	209	157
On the job	3,412	120	481	177	157
Off production site	182	–	44	32	–
Skill improvement training	3,426	7	1,176	73	14
On the job	2,558	–	1,015	22	–
Off production site	867	7	161	52	1

Purpose and type of training	Layout workers, metal	Machine tool setters	Machinists	Mechanics, maintenance	Millwrights
All structured training	112	251	1,846	182	162
On the job	110	146	1,565	155	122
Off production site	2	105	281	27	40
Qualifying training	103	138	682	102	117
On the job	103	138	611	96	115
Off production site	–	–	71	6	2
Skill improvement training	9	113	1,164	79	45
On the job	7	8	955	59	7
Off production site	2	105	210	21	37

Purpose and type of training	Pattern-makers	Plumbers	Sheet-metal workers	Tool and die makers	Welders
All structured training	35	73	775	290	1,014
On the job	16	73	724	268	820
Off production site	19	–	50	23	194
Qualifying training	16	60	726	187	452
On the job	16	60	717	170	452
Off production site	–	–	9	17	–
Skill improvement training	19	13	48	104	562
On the job	–	13	7	98	368
Off production site	19	–	41	6	194

NOTE: Because of rounding, sums of individual items may not equal totals.

Table A-11. Completions: By occupation and purpose and type of training—Transportation equipment industry

(Number of employees in structured training in selected occupations, 1974)

Purpose and type of training	Total, selected occupations	Crane operators	Electri-cians	Electro-platers	Filers and grinders
All structured training	28,433	270	3,556	101	849
On the job	9,860	244	600	58	741
Off production site	18,573	26	2,957	42	108
Qualifying training	20,078	152	2,202	25	662
On the job	6,685	126	465	25	662
Off production site	13,393	26	1,737	–	–
Skill improvement training	8,355	118	1,355	76	187
On the job	3,175	118	135	33	78
Off production site	5,180	–	1,219	42	108

Purpose and type of training	Layout workers, metal	Machine tool setters	Machinists	Mechanics, maintenance	Millwrights
All structured training	1,121	1,194	1,282	454	433
On the job	226	753	624	141	268
Off production site	895	441	658	312	165
Qualifying training	1,051	790	787	123	391
On the job	190	416	443	87	236
Off production site	860	374	344	36	156
Skill improvement training	70	404	495	331	42
On the job	36	337	180	55	33
Off production site	34	67	314	276	9

Purpose and type of training	Pattern-makers	Plumbers	Sheet-metal workers	Tool and die makers	Welders
All structured training	25	2,032	6,135	282	10,699
On the job	25	438	2,884	226	2,631
Off production site	–	1,594	3,251	56	8,068
Qualifying training	14	1,945	3,976	178	7,781
On the job	14	434	1,430	167	1,990
Off production site	–	1,511	2,546	12	5,792
Skill improvement training	11	87	2,159	104	2,918
On the job	11	5	1,453	60	641
Off production site	–	82	705	44	2,277

NOTE: Because of rounding, sums of individual items may not equal totals.

Appendix B. Scope and Method of Survey

Scope of survey

The survey of training in industry covered establishments employing one worker or more in the United States, except Alaska and Hawaii, in the following major industry groups as classified in the 1967 *Standard Industrial Classification* (SIC) *Manual*: Fabricated metal products (SIC 34); machinery, except electrical (SIC 35); electrical machinery (SIC 36); and transportation equipment (SIC 37).

The estimated number of establishments and total employment within the scope of this survey, the sample actually studied, and the usable responses are shown for each major industry group in table B-1.

Timing of survey, and method of collection

Data on enrollments and completions of employer training programs were requested for calendar year 1974. The reference data for total establishment employment and employment for 14 selected occupations within the establishment was the payroll period that included January 12, 1975.

Data were gathered primarily through mail returns, although personal visits were also made in many instances. The initial mail request was completed by June 5, 1975. A second request to nonrespondents was completed by July 11, 1975. More than 700 questionnaires were delivered initially by personal visit, usually to corporate headquarters, primarily because records were not maintained at the establishment level for many firms. In addition, a subsample of nonrespondents to the mail survey, totaling nearly 550 establishments, was selected for field followup visits. All field work related to the mail survey was completed by February 27, 1976.

Sampling and estimating procedures

The sampling procedures required the detailed stratification of all establishments within the scope of the survey by industry and size of establishment. A nationwide sample of nearly 5,000 establishments was selected from the universe. Each of the four major industry groups included in the scope of the survey was sampled separately, with the sampling rates depending on the employment size of the industry. Within each major industry group, a greater proportion of large than of small establishments was included. In developing the estimates from the sample, each establishment was weighted according to its probability of selection. The weighted data were adjusted to total employment within the scope of the survey shown in table B-1.

Estimates of sampling error

The survey procedure yielded estimates of training with varying levels of sampling error, depending largely upon the frequency and magnitude of the training reported for an occupation and the proportion of establishments in the survey sample. Therefore, the larger establishments generally had lower sampling errors than small establishments. The standard error is primarily a measure of sampling variability; that is, it is a measure of the variations in the estimate that might occur by chance because a sample rather than

Table B-1. Number of establishments and workers within scope of survey, number studied, and usable responses, by industry group[1]

Industry	Within scope of survey		Studied		Usable responses	
	Number of establishments[2]	Employment[3]	Number of establishments	Employment	Number of establishments	Employment
All selected industries	92,017	7,047,800	4,776	4,103,088	2,829	2,059,700
Fabricated metal products	29,012	1,362,800	1,248	456,492	772	292,600
Machinery, except electrical	40,567	2,184,800	1,581	958,929	962	489,600
Electrical machinery	13,040	1,844,800	1,161	1,222,664	651	539,100
Transportation equipment	9,398	1,655,500	786	1,465,003	444	738,400

[1] The study covers establishments in the United States, except Alaska and Hawaii.

[2] Reference period—1st Quarter 1975.

[3] Employment benchmark—January 1975.

Table B-2. Estimates and standard errors for employees receiving structured occupational training for each selected occupation, by type and purpose of training, 1974

Purpose and type of training	Employees receiving training (weighted)	Standard error	Employees receiving training (reported)	Employees receiving training (weighted)	Standard error	Employees receiving training (reported)	Employees receiving training (weighted)	Standard error	Employees receiving training (reported)
	Crane operators			Electricians			Electroplaters		
Qualifying training:									
On the job	1,495	810	220	5,039	868	2,115	1,420	498	141
Off production site	44	47	40	2,153	1,438	1,768	48	50	31
Skill improvement training:									
On the job	313	170	161	2,022	713	465	213	128	19
Off production site	113	239	98	2,083	554	1,182	96	39	54
	Filers and grinders			Layout workers, metal			Machine tool setters		
Qualifying training:									
On the job	3,149	975	908	1,416	436	342	2,629	890	670
Off production site	104	165	54	1,173	718	526	499	375	40
Skill improvement training:									
On the job	616	437	56	393	159	58	1,059	404	292
Off production site	253	124	136	463	565	46	301	156	98
	Machinists			Mechanics, maintenance			Millwrights		
Qualifying training:									
On the job	17,148	3,346	3,824	3,977	726	1,357	2,578	341	1,336
Off production site	3,552	3,025	1,321	149	79	62	220	120	98
Skill improvement training:									
On the job	7,735	1,952	858	2,202	2,225	406	728	243	351
Off production site	2,945	948	767	1,088	456	300	60	43	27
	Patternmakers, metal/wood			Plumbers/pipefitters			Sheet-metal workers		
Qualifying training:									
On the job	1,603	810	166	2,993	696	1,492	6,291	1,444	1,837
Off production site	–	–	–	1,809	804	1,240	2,851	1,055	1,121
Skill improvement training:									
On the job	59	49	19	1,013	686	135	1,982	1,032	583
Off production site	168	236	38	184	124	74	1,014	451	819
	Tool and die makers			Welders and flamecutters					
Qualifying training:									
On the job	8,942	1,559	1,769	10,458	1,932	3,790			
Off production site	432	272	103	11,922	1,562	6,925			
Skill improvement training:									
On the job	559	234	185	3,624	1,197	776			
Off production site	317	322	53	6,965	3,193	4,960			

the universe is surveyed. However, it does not measure non-sampling errors such as processing errors or any systematic biases in the data. The standard error shows that the chances are about 68 out of 100 that an estimate from the sample would differ from a complete census by less than the standard error shown in table B-2. The chances are about 19 out of 20 that the difference would be less than twice the standard error.

The Bureau calculated estimates for standard error for employees receiving training for each occupation by type and purpose of training. Generally, standard errors ran fairly high, but this was to be expected because of the small

size of the variable being measured and the small proportion of establishments providing training.

Estimates and their standard errors, shown in table B-2, should be interpreted as follows:

Enrollments of crane operators in off-production-site training were reported as 40. The weighted estimate is 44 (reported number weighted by ratio of 110). The standard error for this weighted estimate is 47. Thus, the estimate within one standard error ranged from 40[1] to 91, or, chances are 68 out of 100 that the actual number of crane operators enrolled in off-production site training fell between 40 and 91.

[1] The actual reported number of employees receiving training is the lower range of the estimate in cases when the weighted estimate minus the standard error is lower than the actual reported number.

Appendix C. Survey of Occupational Training in Industry

BLS 3050
Jan. 1975

O.M.B. No. 044S-75008
Approval expires 12/75

U.S. DEPARTMENT OF LABOR
Bureau of Labor Statistics
Washington, D.C. 20212

(Change name and address if incorrect.)

COPY FOR YOUR FILES

Location

Employment

Identification or location of establishment for which information is requested, if different from mailing address.

SURVEY OF
OCCUPATIONAL TRAINING
IN INDUSTRY

The Bureau of Labor Statistics will hold all information furnished by the respondent in strict confidence.

SURVEY OF TRAINING IN INDUSTRY
SELECTED OCCUPATIONS, 1974

CODE	OCCUPATIONAL DEFINITIONS
01	**CRANEMAN, DERRICKMAN, AND HOISTMAN** (electric-monorail-crane operator; electric-bridge-or-gantry-crane operator; locomotive-crane operator; tractor-crane operator; truck-crane operator; diesel, electric, compressed air, gasoline, or steam drum hoist operator; etc.): Operates various kinds of cranes and hoists to lift, move, and load materials, machines, and products.
02	**ELECTRICIAN:** Installs, maintains, and repairs wiring, electrical equipment, and fixtures. Insures that work is in accordance with relevant codes and may read blueprints.
03	**ELECTROPLATER:** Sets up, operates or tends plating equipment to coat metal or plastic objects electrolytically with metal to provide protective or decorative surfaces or to build up worn surfaces. Work may involve pickling or other cleaning of the object in preparation for electrolysis.
04	**FILER, GRINDER, BUFFER, CHIPPER, CLEANER, AND/OR POLISHER:** Include workers concerned with filing, grinding, buffing, chipping, cleaning, and polishing metal parts or objects other than by the use of production machines.
05	**LAY-OUT MAN, METAL:** Lays out reference points and dimensions on metal stock, structural shapes, or workpieces such as castings, plates, tubes, or machine parts to indicate processing to be done such as machining, welding, or assembly, analyzing specifications and computing dimensions according to knowledge of products, subsequent processing, shop mathematics, and layout procedures. Exclude workers whose duties involve only tracing from templates.
06	**MACHINE TOOL SET-UP MAN** (lathe set-up man; drill-press set-up man; all-round set-up man; etc.): Sets up variety of machine tools, such as gear hobbers, lathes, milling machines, boring machines, and grinders, for other workers, and machines' first-run piece.
07	**MACHINIST** (maintenance machinist; production machinist; etc.): Sets up and operates machine tools and fits and assembles parts to make or repair metal parts, mechanisms, tools, or machines of an establishment, applying knowledge of mechanics, shop mathematics, metal properties, and layout machining procedures. Studies specifications, such as blueprint, sketch, or description of part to be replaced, and plans sequence of operations.
08	**MECHANIC, MAINTENANCE** *(EXCLUDE MILLWRIGHT)*: Repairs in accordance with diagrams, operation manuals, or manufacturer's specifications, machinery and mechanical equipment of an establishment such as cranes, pumps, motors, conveyor systems, and production machines.
09	**MILLWRIGHT** *(EXCLUDE MAINTENANCE MECHANICS)*: Installs new machinery and heavy equipment according to layout plans, blueprints, and other drawings in an establishment and dismantles and moves machinery and heavy equipment, when changes in plant layout are required. Uses a variety of handtools, hoists, dollies, and trucks. May construct foundations for machines.
10	**PATTERNMAKER, METAL** (aircraft loftsman, etc.): Lays out, machines, fits, and assembles castings and parts to metal foundry patterns, core boxes, and match plates, using handtools and machine tools, and analyzes specifications according to knowledge of patternmaking methods. **PATTERNMAKER, WOOD** (wood pattern repairman, ship loftsman, etc.): Plans, lays out, and constructs wooden unit or sectional patterns used in forming sand molds for casting, analyzing blueprints and using handtools.
11	**PLUMBER AND/OR PIPEFITTER:** Assembles, installs, alters and/or repairs pipe systems (metal, plastic, ceramic, composition, etc.) that carry water, steam, air, or other liquids or gases.
12	**SHEET METAL WORKER** (coppersmith; tinsmith; fabricator, special items; roofer, metal; model maker, sheet metal; etc.): Fabricates, assembles, installs, and repairs sheet metal products and equipment, such as control boxes, drainpipes, and furnace casings. Work may involve any of the following: Sets up and operates fabricating machines to cut, bend, and straighten sheet metal; shapes metal over anvils, blocks, or forms, using hammer; operates soldering and welding equipment to join sheet metal parts; inspects, assembles, and smooths seams and joints of burred surfaces.
13	**TOOL AND DIE MAKER, METAL** *(EXCLUDE DIE SINKER AND DIE SETTER)*: Analyzes variety of specifications, lays out metal stock, sets up and operates machine tools, and fits and assembles parts to make and repair metalworking dies, cutting tools, jigs, fixtures, gages, and machinists' handtools.
14	**WELDER AND FLAMECUTTER** (arc welder; gas welder; spot welder; solderer; leadburner; resistance welder; etc.): Joins, surfaces, or otherwise makes or repairs structures or parts, using gas or electric welding, soldering, or brazing equipment with or without filler material; fusing to join or shape lead products or parts, using gas torch; cutting or perforating metal, using gas or electric cutting equipment.

REPORTING INSTRUCTIONS

Complete this questionnaire for your company operation (establishment) identified on the mailing label.

To help multi-establishment employers correctly identify this "reporting unit," its physical location has been printed in the lower left portion of the mailing label. Our estimate of the number of persons employed at this establishment appears in the lower right corner of the label.

A. GENERAL INFORMATION

1. What was the principal product manufactured by your establishment in 1974? (Please describe, i.e., "manufacture of automatic lathes;" "manufacture of electronic components.")

_____

_____

2. What is the total number of employees carried on your establishment's payroll for the payroll period which included *January 12, 1975*? . . . . . | NO. OF EMPLOYEES | |

3. Did your establishment employ any workers in any of the following occupations as of *January 12, 1975*, and if so, how many? (Do not report the same employee in more than one category–see job definitions on the opposite page.)

CODE	OCCUPATION	NUMBER OF WORKERS
01	Craneman, Derrickman, and Hoistman	
02	Electrician	
03	Electroplater	
04	Filer, Grinder, Buffer, Chipper, Cleaner and/or Polisher	
05	Lay-Out Man, Metal	
06	Machine Tool Set-Up Man	
07	Machinist	
08	Mechanic, Maintenance *(Exclude Millwright)*	
09	Millwright *(Exclude Maintenance Mechanics)*	
10	Patternmaker, Metal/Wood	
11	Plumber and/or Pipefitter	
12	Sheetmetal Worker	
13	Tool and Die Maker, Metal *(Exclude Die Sinker and Die Setter)*	
14	Welder and Flamecutter	

TRAINING DEFINITIONS

A worker can acquire an occupational skill in various ways–general education, experience, training, or a combination of these. This survey deals exclusively with *"training"* as the means of acquiring job skills.

For purposes of completing this form *"training"* is defined as a *structured program* provided by employers to their employees which is designed to permit employees to *acquire or improve skills in the selected occupations listed on page 3*. A structured training program must:

- have an *identifiable plan* designed to *develop* a worker's *specific skill* or *level of competence*.
- involve the *active presence* of an *instructor or trainer* during the training process. A teaching machine or some other programmed self-learning device may be substituted for a human instructor.

  In the case of an **APPRENTICESHIP** program, the "trainer" is usually a supervisor or other fellow employee of the trainee. (See Qualifying Training, Page 6.)

  In cases of training not related to apprenticeship, a supervisor or fellow employee who, incidental to his main responsibility, gives *occasional, unscheduled* instruction *should not* be considered an instructor or trainer.

Structured training may:

- be conducted by the establishment (or company), or by some other business firm, educational institution, or labor organization, either separately or in conjunction with your establishment or company.
- take place before, during, or after work hours.
- take place with or without compensation to the trainee.
- involve government sponsorship and/or funding.

Structured training includes APPRENTICESHIP training.

This survey excludes skill acquisition or skill improvement that results from casual "learning-by-doing" or "picking it up." Also excluded are courses and programs which *are not primarily* concerned with teaching occupational skills...such as programs which primarily deal with general orientation; safety orientation; company policies, practices, and programs; supervision; and supervisory or management practices.

This questionnaire form separates training into two distinct categories as follows:

1. QUALIFYING TRAINING (Page 6)–Given to qualify employees for work in an occupation. It may be given to employees with no previous work experience. It may also be given to experienced workers to qualify them to work in an occupation other than the one they hold.

2. SKILL IMPROVEMENT TRAINING (Page 7)–Given only to experienced workers to improve their skills in the occupations they now hold.

B. OCCUPATIONAL TRAINING IN 1974

1. Did your establishment provide, in 1974, structured training for any of the occupations listed on page 3?

   Yes ☐ (skip to question C.) No ☐

2. If you did not provide any structured training in 1974 for occupations listed on page 3, please identify any or all of the following conditions that influenced your decision *not to provide* such training. (Check one or more blocks below.)

   (1) ☐ Informal training satisfies our needs.

   (2) ☐ We prefer to recruit trained workers.

   (3) ☐ We have only a few skilled jobs...structured training is unnecessary.

   (4) ☐ Our production process shifts tasks away from skilled to lesser skilled workers who are already available.

   (5) ☐ The cost of structured training is prohibitive.

   (6) ☐ The risk of training employees and then losing them to other firms is too great.

   (7) ☐ Our establishment does not have the capability to provide structured training.

   (8) ☐ Other (give brief description) _____

   _____

3. Which one of the factors listed above was the primary one in your decision not to provide structured occupational training in 1974, for occupations listed on page 3? List the number (1-8) of the primary factor. . . . . Primary Factor NO. ☐

4. If you did not provide training for the listed occupations, did you provide, in 1974, structured training for any *other* occupation(s)?

   Yes ☐ No ☐

   SKIP TO PAGE 12, QUESTION O. DO NOT COMPLETE QUESTIONS C. THRU N.

C. REASONS FOR PROVIDING OCCUPATIONAL TRAINING

1. For all structured training related to the occupations listed on page 3, please identify below any or all of the reasons that influenced your establishment's decision to provide such training in 1974.

   (1) ☐ Necessary job skills can best be learned through our own training program.

   (2) ☐ A tight labor market is anticipated for these job skills.

   (3) ☐ Occupational training is consistent with employee's career development needs.

   (4) ☐ Production methods have changed, are changing, or are expected to change. Accordingly, new skills must be developed by our employees.

   (5) ☐ Employees have inadequate educational and/or training backgrounds and, therefore, require company training.

   (6) ☐ Other (give brief description) _____

   _____

2. Which reason listed above was primary in your decision to provide occupational training? (Enter the number–1 through 6–of the primary reason.) . . . . . Primary Reason NO. ☐

D. QUALIFYING TRAINING: Training given to qualify newly hired or other employees for work in an occupation. **Includes APPRENTICESHIP training.**

1. **ON-THE-JOB TRAINING (OJT)**—A training process that takes place primarily on the job during actual production operations. This training may include some instruction given off the production site. **APPRENTICESHIP** training including related classroom instruction should be reported in this category.

2. **OFF PRODUCTION-SITE TRAINING (OPST)**—A training process that usually takes place off the production site in a training facility such as a classroom or an equipped site used primarily for training. The training facility may be operated by the company, either on or off the firm's premises, or by other organizations, such as a technical institute, college, or university. Training undertaken at a facility not operated by the firm *should be counted only if the company pays the cost of training in whole or in part, or pays employees wages while they are attending training classes. Include correspondence course training if paid or reimbursed by the firm.* **Exclude APPRENTICESHIP** training and its related classroom instruction...see OJT above.

NOTE: Employees who received training in more than one training category or for more than one occupation, should be included in each count of training received.
COMPLETION OF TRAINING: Training is considered to have been completed when the *trainee* has achieved the objectives of the training process or program.

D.1. For occupations listed in Column 2, did your establishment provide, in 1974, any *on-the-job training to qualify an employee for work in these occupations*?

Yes ☐ No ☐

If yes, please answer the questions below before proceeding to D.2. If no, proceed to question D.2 at right.

D.2. For occupations listed in Column 2, did your establishment provide, in 1974, any training that consisted *primarily of instruction off the production site to qualify an employee for work in these occupations*?

Yes ☐ No ☐

If yes, please answer the questions below before proceeding to E.1 and E.2. If no, proceed to questions E.1 and E.2 on the next page.

CODE (1)	OCCUPATION (2)	How many employees received OJT during 1974?* (3)	How many employees completed the OJT in 1974? (4)	What is the total length (in hours) of the OJT program? (5)	Was the training registered as an *apprenticeship training program*? Check one. (6) Yes	No	How many employees received OPST during 1974?* (7)	How many employees completed the OPST in 1974? (8)	What is the total length (in hours) of the OPST program? (9)
01	Craneman, Derrickman, and Hoistman			hrs.	☐	☐			hrs.
02	Electrician			hrs.	☐	☐			hrs.
03	Electroplater			hrs.	☐	☐			hrs.
04	Filer, Grinder, Buffer, etc.			hrs.	☐	☐			hrs.
05	Lay-Out Man, Metal			hrs.	☐	☐			hrs.
06	Machine Tool Set-Up Man			hrs.	☐	☐			hrs.
07	Machinist			hrs.	☐	☐			hrs.
08	Mechanic, Maintenance (exclude Millwright)			hrs.	☐	☐			hrs.
09	Millwright (exclude Maintenance Mechanics)			hrs.	☐	☐			hrs.
10	Patternmaker, Metal/Wood			hrs.	☐	☐			hrs.
11	Plumber and/or Pipefitter			hrs.	☐	☐			hrs.
12	Sheet Metal Worker			hrs.	☐	☐			hrs.
13	Tool and Die Maker			hrs.	☐	☐			hrs.
14	Welder and Flamecutter			hrs.	☐	☐			hrs.
				hrs.	☐	☐			hrs.
				hrs.	☐	☐			hrs.
				hrs.	☐	☐			hrs.
				hrs.	☐	☐			hrs.

* If your establishment provided more than one kind of OJT or OPST training program *for the same occupation*, record the data by using the appropriate line above and one or more lines below.

E. SKILL IMPROVEMENT TRAINING: Training given to improve the job skills of a worker in the occupation in which he or she is currently employed.

1. ON-THE-JOB TRAINING (OJT)—A training process that takes place primarily on the job during actual production operations. This training may include some instruction given off the production site. Exclude APPRENTICESHIP training and its related classroom instruction which should be included in D.1, page 6.

2. OFF PRODUCTION-SITE TRAINING (OPST)—A training process that usually takes place off the production site in a training facility such as a classroom or an equipped site used primarily for training. The training facility may be operated by the company, either on or off the firm's premises, or by other organizations, such as a technical institute, college, or university. Training undertaken at a facility not operated by the firm *should be counted only if the company pays the cost of training in whole or in part, or pays employees wages while they are attending training classes. Include correspondence course training if paid or reimbursed by the firm.* Exclude APPRENTICESHIP training and its related classroom instruction...see D.1, page 6.

NOTE: Employees who received training in more than one training category or for more than one occupation should be included in each count of training received.

COMPLETION OF TRAINING: Training is considered to have been completed when the *trainee* has achieved the objectives of the training process or program.

E.1. For occupations listed in Column 2, did your establishment provide, in 1974, *any on-the-job training to improve the job skills of a worker* in the occupation in which he or she was then employed?

Yes ☐ No ☐

If yes, please answer the questions below before proceeding to E.2. If no, proceed to question E.2 at right.

E.2. For occupations listed in Column 2, did your establishment provide, in 1974, any training that consisted *primarily of instruction off the production site to improve the job skills of a worker* in the occupation in which he or she was then employed?

Yes ☐ No ☐

If yes, please answer the questions below before proceeding to the next page. If no, proceed to the next page.

CODE (1)	OCCUPATION (2)	How many employees received OJT during 1974?* (3)	How many employees completed the OJT in 1974? (4)	What is the total length (in hours) of the OJT program? (5)	How many employees received OPST during 1974?* (6)	How many employees completed the OPST in 1974? (7)	What is the total length (in hours) of the OPST program? (8)
01	Craneman, Derrickman, and Hoistman			hrs.			hrs.
02	Electrician			hrs.			hrs.
03	Electroplater			hrs.			hrs.
04	Filer, Grinder, Buffer, etc.			hrs.			hrs.
05	Lay-Out Man, Metal			hrs.			hrs.
06	Machine Tool Set-Up Man			hrs.			hrs.
07	Machinist			hrs.			hrs.
08	Mechanic, Maintenance (exclude Millwright)			hrs.			hrs.
09	Millwright (exclude Maintenance Mechanics)			hrs.			hrs.
10	Patternmaker, Metal/Wood			hrs.			hrs.
11	Plumber and/or Pipefitter			hrs.			hrs.
12	Sheet Metal Worker			hrs.			hrs.
13	Tool and Die Maker			hrs.			hrs.
14	Welder and Flamecutter			hrs.			hrs.
				hrs.			hrs.

* If your establishment provided more than one kind of OJT or OPST training program *for the same occupation*, record the data by using the appropriate line above and one or more lines below.

				hrs.			hrs.
				hrs.			hrs.
				hrs.			hrs.
				hrs.			hrs.

PLEASE COMPLETE THE QUESTIONS BELOW AND ON THE FOLLOWING PAGES IF YOU REPORTED ON PAGES 6 OR 7 THAT YOUR ESTABLISHMENT PROVIDED TRAINING IN 1974. INFORMATION YOU REPORT SHOULD RELATE DIRECTLY TO THE TRAINING PROGRAM(S) REPORTED ON PAGES 6 AND 7.

F. CHARACTERISTICS OF THE TRAINING STAFF

1. Please estimate the number of persons *on the payroll of your establishment* who spend *any* of their work time as "instructors" in the training programs you reported on pages 6 and 7. Include supervisors and journeymen associated with apprenticeship training programs. (If "0," skip to question F.4.) . . . . . ☐

2. How many of the persons reported above spend *all* of their work time as instructors in these programs? . . . . . ☐

3. Is "instructor training" given to instructors reported in F.1 above?

   Yes ☐ No ☐

4. Is any of the instruction related to training programs reported on pages 6 and 7 given by persons who are not on your payroll, e.g., company training center staff, college faculty, etc.?

   Yes ☐ No ☐

REMARKS: _____

G. DESCRIPTION OF THE TRAINING SITE (OR FACILITY)

Please identify any or all of the following descriptions which apply to the facility or site where training is given. (Check one or more blocks.)

COMPANY OWNED FACILITY

- ☐ The production shop of our establishment.
- ☐ A classroom in our establishment.
- ☐ An area of our establishment separate from the production shop, but equipped and designed specifically for training.
- ☐ Other company owned facility (give brief description) _____

FACILITY NOT OWNED BY COMPANY

- ☐ An adult vocational or technical school facility.
- ☐ A high school facility.
- ☐ A community college facility.
- ☐ A labor union facility.
- ☐ Vendor's or manufacturer's schools.
- ☐ Training received via correspondence school.
- ☐ Other (give brief description) _____

H. TRAINING CONTENT AND EVALUATION

1. For any structured training program reported on page 6 or 7, please identify any or all of the following groups who helped determine the course content of the program. (Check one or more blocks.)

- ☐ Trade associations.
- ☐ Vendors or manufacturers of plant machinery and equipment.
- ☐ Union-management cooperation and/or committees (e.g., a joint apprenticeship committee).
- ☐ Vocational educators or other education specialists.
- ☐ In-plant analysis by department heads, supervisors, and foremen.
- ☐ Consulting firms.
- ☐ Other (give brief description) _____

_____

_____

2. Are occupational training programs periodically evaluated by management? . . . . . Yes ☐ No ☐ (skip to question I.)

3. If yes, please identify any or all factors utilized to evaluate a typical occupational training program. (Check one or more blocks.)

- ☐ Supervisory feedback.
- ☐ Written or other types of examination of trainee to measure degree of skill acquired or level of competence.
- ☐ Follow-up studies of trainee.
- ☐ Outside educators or consulting firm evaluation.
- ☐ Other (give brief description) _____

_____

_____

I. TRAINING RECORDS

How is an employee's training experience recorded and/or maintained by your establishment? (Check one or more blocks.)

- ☐ No records maintained.
- ☐ Record maintained in our personnel department.
- ☐ Record maintained in our training department.
- ☐ Record maintained by our payroll department.
- ☐ Record maintained by employee's supervisor.
- ☐ Other (give brief description) _____

_____

_____

_____

J. TRAINING COSTS

1. Does the establishment have a specific budget allocation for training? . . . . . Yes ☐ No ☐ (skip to question K.)

2. If yes, identify any or all of the training cost items listed below for which separate and specific costs are recorded in the training records of your establishment. (Check one or more blanks.)

- ☐ No separate costs records are kept.
- ☐ Tuition, books, supplies, etc.
- ☐ Trainee transportation reimbursement.
- ☐ Personnel costs (instructors, support staff, consultants, etc.)
- ☐ Cost of training facility.
- ☐ Overhead costs charged to training.
- ☐ Labor cost of trainees.
- ☐ Othe (give brief description) _____

_____

K. BENEFITS ACCRUING TO EMPLOYEES WHO COMPLETE TRAINING

Please identify any or all of the following benefits which accrue to an employee who successfully completes training.

- Check blocks in column (1) to identify benefits which accrue to an employee who successfully completes *qualifying training* in programs reported on page 6. (Check one or more blocks.)
- Check blocks in column (2) to identify benefits which accrue to an employee who successfully completes *skill improvement training* in programs reported on page 7. (Check one or more blocks.)

(1) Qualifying Training (See page 6)	(2) Skill Improvement Training (See page 7)	Benefit
☐	☐	Promotion when training is satisfactorily completed or soon thereafter.
☐	☐	Employee returns to his regular job but may receive a higher pay rate.
☐	☐	Completion certificate placed in employee's personnel file.
☐	☐	Other (give brief description) _____

_____

_____

L. EMPLOYEE COMPENSATION FOR TIME SPENT IN TRAINING

1. Does the establishment provide training *outside of* the trainee's regular working hours? . . . . . Yes ☐ No ☐ (skip to question L.3.)

2. If yes, do most trainees receive pay for this time spent in training? . . . . . Yes ☐ No ☐

3. Does the establishment provide training off the production site *during* the trainee's regular working hours? . . . . . Yes ☐ No ☐ (skip to question M.)

4. If yes, do most trainees receive pay for this time spent in training? . . . . . Yes ☐ No ☐

M. SPECIFIC JOB SKILLS TAUGHT

Column 1: If you reported "QUALIFYING TRAINING" on page 6, please enter in column 1 below the title of the one occupation in which the largest number of people were trained. Then, by means of checkmarks identify any subject-matter in the training program related to that occupation that accounts for at least 10% of the trainees' total instruction time. (If both OJT and OPST programs are reported on page 6 for the occupation being reported and the same number of people were trained in each, complete this section for the OPST program.)

Column 2: If you reported "SKILL IMPROVEMENT TRAINING" on page 7, please enter in column 2 below the title of the one occupation in which the largest number of people were trained. Then, by means of checkmarks, identify any subject-matter in the training program related to that occupation that accounts for at least 10% of the trainees' total instruction time. (If both OJT and OPST programs are reported on page 7 for the occuoation being reported and the same number of people were trained in each, complete this section for the OPST program.)

Write in the title of the occupation for which you are supplying data.	COLUMN 1 QUALIFYING TRAINING		COLUMN 2 SKILL IMPROVEMENT TRAINING	
Enter Occupation →	ELECTRICIAN		LAY-OUT MAN, METAL	
TRAINING CONTENT	On-the-Job (OJT)	Off-Production Site (OPST)	On-the-Job (OJT)	Off-Production Site (OPST)
1. Production and Quality Control				
2. Care and use of Tools and Equipment	✓			
3. Trade Mathematics				✓
4. Blueprint Reading/Drafting				✓
5. Layout and Planning Procedures	✓			

SAMPLE

Write in the title of the occupation for which you are supplying data.	COLUMN 1 QUALIFYING TRAINING		COLUMN 2 SKILL IMPROVEMENT TRAINING	
Enter Occupation →				
TRAINING CONTENT	On-the-Job (OJT)	Off-Production Site (OPST)	On-the-Job (OJT)	Off-Production Site (OPST)
1. Production and Quality Control				
2. Care and use of Tools and Equipment				
3. Trade Mathematics				
4. Blueprint Reading/Drafting				
5. Layout and Planning Procedures				
6. Machine Operation				
7. Estimating Labor and Material Requirements				
8. Safety Procedures				
9. Preventive Maintenance, Repair, and Inspection				
10. Work Attitudes and Habits				
11. Leadership Training				
12. Communication Skills				
13. Other Subject Matter (please specify)				
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____

N. METHOD OF SELECTING EMPLOYEES FOR TRAINING

1. **Please identify any or all of the following factors which influence your selection of employees for training.**

- Check blocks in column (1) to identify selection factors for *qualifying training* reported on page 6. (Check one or more blocks.)
- Check blocks in column (2) to identify selection factors for *skill improvement training* reported on page 7. (Check one or more blocks.)

	(1) Qualifying Training (See page 6)	(2) Skill Improvement Training (See page 7)	SELECTION FACTORS
(1)	☐	☐	Length of service with our establishment or company.
(2)	☐	☐	Favorable work record with our establishment or company.
(3)	☐	☐	To meet or fulfill affirmative action policies.
(4)	☐	☐	Employee's interest in an occupation.
(5)	☐	☐	Tests (achievement, aptitude, etc.).
(6)	☐	☐	Other (give brief description) _____

2. **Which one of the factors which you identified above is most important in the selection process? Enter the number (1 through 6) of the primary factor.**

(a) Qualifying Training: . . . . . NO. ☐

(b) Skill Improvement Training: . . . . . NO. ☐

3. **Does your establishment have a collective bargaining agreement with a labor union which stipulates any of the selection factors you identified in question N.1 above?**

Yes ☐ No ☐

O. WHOM SHOULD WE CONTACT if questions arise regarding this report? (Please print or type.)

Name:	Title:
City/State:	Area Code/Phone Number:

Thank you for your cooperation. Please be sure that the form which you return to us is the one with the mailing label affixed to the first page.

If you wish to receive a complimentary copy of the survey report which we plan to publish, please check here. ☐

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